



COAL AGE



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No. 19

The Sorting and Sizing of Men

In the business of mining there is an important process that has to do with the selection of men for the real jobs. Each company has a set of invisible screens through which all employees are sifted.

Those ever-present immortals "Time" and "Trouble"

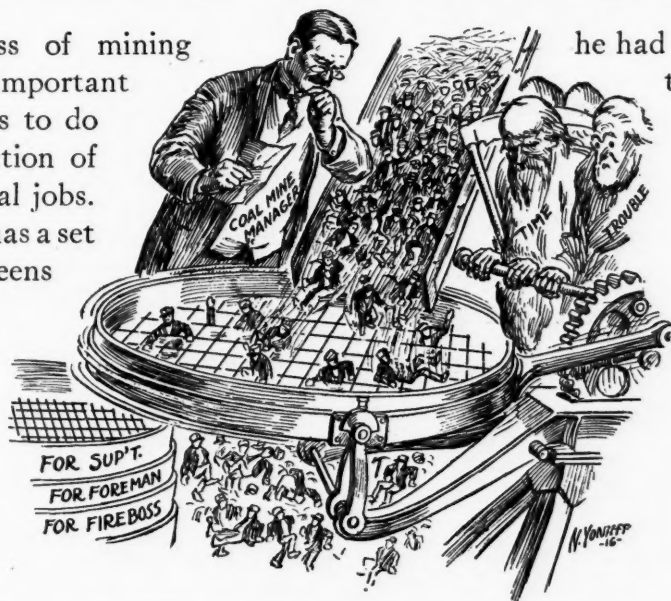
laboriously and slowly, but unceasingly, turn the crank that agitates the sieves.

The coal-mine manager stands close by carefully watching the process. He changes the sieves from time to time, according to his company's needs.

The greater the requirements, the bigger the mesh. Little men with little minds and few qualifications are shaken through and disappear with the crowd.

Likewise grumblers, grouches, knockers, idlers, clock-gazers, booze-fighters and men who do only what they are told to do, all sift through, and each one is known by a number rather than a name.

Charles M. Schwab tells how Bill Jones, one of Carnegie's boys, picked a draftsman. He asked the superintendent to name the most capable man



he had and was told that they were all first-class workers. Jones wasn't satisfied and said, "Tell every man to stick on the job until seven o'clock." The order was a surprise to the draftsman, as it came in a slow season. But they

kept on cheerfully. As seven o'clock drew near, Jones noticed that the men kept looking up to see how much more time they had to put in. All save one. Over in a corner a young man was so absorbed he had forgotten the time, and when the others hustled out at the stroke of the hour he was still bending over his work. Needless to say, Jones picked him for the new job, and he became a high-salaried engineer.

Every real boss is continually on the lookout for signs and traits indicating the character of the men he employs. The only way to keep out of the bin of mediocrity and rise above the crowd is to be so filled with knowledge, enthusiasm and manhood that "Time" and "Trouble" can't shake you through the screen which has been placed to measure your worth.

Ideas and Suggestions

Facing the Issue

A sales manager's job these days is as popular and desirable as that of the operator of a Zeppelin. It is both ticklish and nerve-wracking, and fraught with the possibility of forever losing a high prestige gained after years of painstaking and concentrated industry. Harassed, implored, threatened and cajoled, as coal shippers now are for deliveries, it is only human—in fact he would be an exceptional man who didn't—that managers try to dodge the issue of informing their customers about the true state of conditions.

They endeavor to put them off with facile promises—promises, which at the time they are made, the sales managers have no more idea of how to live up to than the man in the moon. The Lord only knows that they wish that they could fulfill them. It would be as much of a relief to them as to the customers.

The question arises, Why do managers make promises which they have every reason in the world to believe cannot be accomplished at the time specified, and perhaps not until several months afterward? The fault in a great measure lies at the doors of the customers. In telephoning about his deliveries, or in calling in person about them, it is almost an impossibility to cut the customer off or send him away without some sort of a promise, no matter how hazy and unsatisfactory it may be. He nevertheless insists upon getting a promise. To a certain extent it relieves him, notwithstanding the fact that even he, personally, has grave doubts as to its performance. This is a human idiosyncrasy which is met with in every walk of life. In unvarnished English it is "passing the buck." The customer is simply trying to shift part of his responsibility onto another's shoulders, so that in case he should be caught he wholly would not feel at fault. Every one of us is at heart a cry-baby, and if we can point at someone else and say "Well, he's just as much to blame as I am," we experience a certain satisfaction.

SHOULD INFORM CUSTOMERS OF TRUE SITUATION

It is in connection with this phase of the question that I wish to write. The managers, in justice to themselves and their customers, should rise to the critical situation forced upon them and frankly and unstintingly inform each and every customer the true facts as they affect their particular condition. This is no doubt a somewhat radical suggestion, as no manager is anxious to admit defeat, but these are radical times and demand radical measures.

On the one hand it isn't fair to the manager that he should be hounded into making promises which he knows he will have to lay down on, and in consequence lose the prestige which past conduct has earned him. On the other hand it will probably prove a costly matter to the customer, for before he knows it he will be obliged to close down on account of the shortage of fuel or else have to go into the open market and purchase at a high price, while had he been given to understand the cold

facts he might have protected himself in advance. It is thus easily seen that this habit of dodging the issue and making impossible promises works harm to both parties concerned.

The remedy, unpleasant as it is, must be begun by the manager. It is up to him to take his customers into the fullest confidence as to just how he stands in the matter of apportioning deliveries. He should spare neither himself nor the customer. Unless he makes a clean job of it the situation will not be improved one iota. Naturally, the customer will unburden himself of a great many platitudes on contract obligations, etc., but there is no doubt whatever but that in the end he will appreciate a frank statement about his fuel supply.

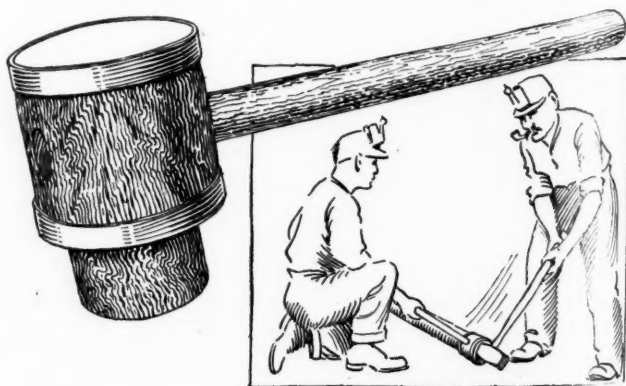
Although this facing of the issue passes the buck to him, it really is for the best, as he can determine more accurately the extent of his particular predicament, and in turn meet it more satisfactorily. Honest coöperation in this matter is absolutely essential, since conditions, instead of improving, are becoming more and more acute as time passes. The issue cannot be dodged, and delay only makes it the more difficult to face.

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A Useful Pipe Driver

BY SAMUEL JONES*

For the benefit of brother mine foremen, I submit a description of a device that I have found useful and handy in laying wooden pipe lines. This device does not



A SIMPLE BUT PRACTICAL PIPE DRIVER

break the lips of the pipe and may be easily made at any mine blacksmith shop.

A straight, sound, hardwood prop about 3 in. larger in diameter than the recess in the end of the pipe to be laid should first be selected. A piece should be cut from this prop about 10 in. in length. On this piece a band is shrunk at one end and also a similar band about 3 in. from the opposite end. Outside of this second band a cut 1½ in. deep is made with a saw entirely around the block, and the wood between this cut and

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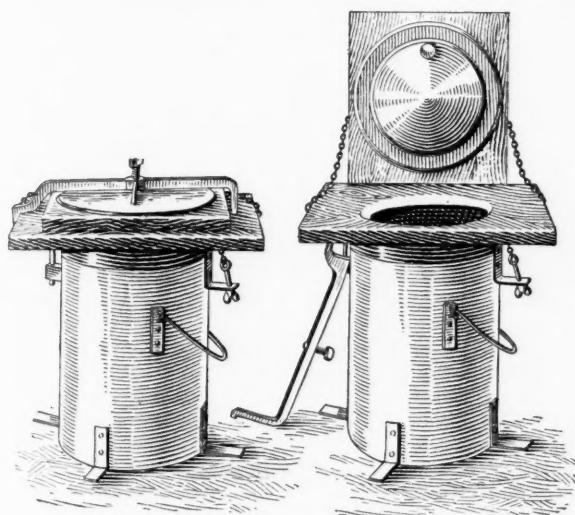
the end of the block split off, leaving a projection that will fit easily but snugly within the female end of the wooden pipe section. A suitable handle may now be fitted to the block. This completes the tool.

In use this device is employed in a manner similar to a blacksmith's flat or set hammer—it forms a convenient buffer block for the end of the pipe when two sections are to be driven together. By its use there is no danger of injuring the end of the pipe by direct sledging.

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A Sanitary Mine Latrine

The accompanying illustration shows a type of mine latrine manufactured by E. D. Bullard, of San Francisco, and described in the *Engineering and Mining Journal*.



A SANITARY LATRINE

This type recommends itself because of its simplicity and sanitary properties. It can be taken apart and cleaned when necessary.

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Rusted-In Bolts and Screws

There is scarcely any greater annoyance to the mine mechanic or repairman than the twisting off of the head of a screw bolt or a setscrew when attempting to remove the same by applying a wrench to the head of a screw that has become rusted in the hole and refuses to turn. This often happens when the demand for the work is urgent, or when the man's muscular force exceeds his judgment and experience.

When a bolt or a setscrew has rusted in its hole, any attempt to turn it by applying force is always attended with the risk of breaking the head of the bolt or twisting it off from its shank. A good mechanic's judgment will generally tell him what force can be applied to the wrench with safety.

It is better not to be in too great a hurry, in such a case. Apply coal oil to the bolt and allow the oil sufficient time to eat its way into the rusted hole. At the same time, tap the head of the bolt frequently so that the jar will break the contact formed by the rust and which binds the screw and holds it fast in the hole.

If these means are without avail, a good method to adopt is to apply heat to the bolt and the surrounding parts by means of a torch flame or a red-hot iron. Then,

when the part has become sufficiently heated and expanded, try to cool the bolt by applying ice or cold water to its head, as far as possible protecting the other part from contact with the water by rags or other material placed around the head of the bolt or screw. Again, tap the head of the bolt or screw sharply and apply the wrench with sudden light jerks, first in one direction, then in the other, until the screw becomes loosened. The oil applied to the bolt may require some time to eat its way into the hole, but it will be better to allow this time for the oil to do its work rather than to run the risk of twisting off the head of the bolt.

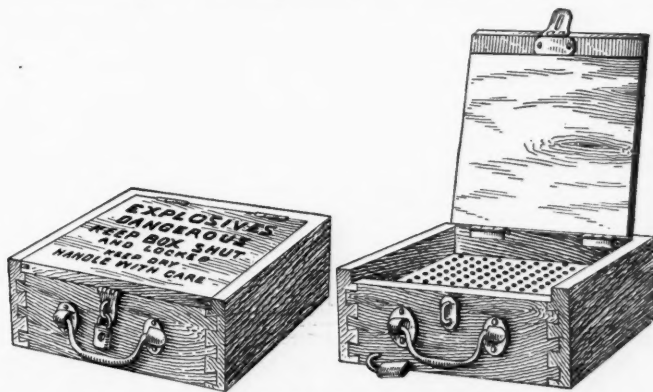
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A Convenient Safety Cap Box

Although it is a dangerous practice to carry dynamite and caps in the same vehicle on account of the sensitiveness of the caps to shock and the probability that their explosion would fire the dynamite, there are times when separate loading or two trips are very inconvenient and expensive. To provide for such cases and also to care for caps in the field, a safety box has been designed that makes it feasible to transport caps and dynamite in the same vehicle without extraordinary risk, and greatly decreases the risk from flying fragments in field blasting.

This box as illustrated, from the *Du Pont Magazine*, September, 1916, is made of oak $\frac{7}{8}$ in. thick, dovetailed at corners and with rabbeted bottom of oak. The top is of $\frac{1}{2}$ -in. pine with blind hinges and staple. The loaded box cannot be opened without destroying the cover. Even the most enterprising pryer will hesitate to use force on a caseful of sensitive explosives.

The box is lined inside with $\frac{1}{2}$ -in. felt, obtainable at harness shops. The cap board is removable, but should



A SAFE BOX TO CARRY CAPS

fit snugly on and between the felts. The space between the bottom of the cover and the top of the bottom felt should be just right to hold caps firmly without undue pressure. The holes in the cap board, 100 in number, should be large enough to permit easy entrance of caps, but not large enough to let them fall out.

The fact that a box made this way was filled with 100 caps and thrown over a 50-ft. embankment into a quarry, where it bounded around on the rocks and no explosion resulted shows that it should fulfill its requirements.

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[Readers of *Coal Age* in answer to our recent invitation are sending in a number of excellent ideas of a practical and helpful nature. Keep up the good work and help us make these pages the most valuable department in the paper.—Editor.]

Coal-Face Conveyors Employed in the United Kingdom--I

By SYDNEY F. WALKER*

SYNOPSIS—Exhaustion of the thicker coal beds in Britain has rendered the working of thinner measures highly desirable. To meet this condition the coal-face conveyor has been developed. Two types of conveyor are described in this article.

For some time past, the bulk of the thicker coal beds in the United Kingdom having been worked out, the thinner seams have been gradually mined. The Royal Commission on coal supplies of 1905, which went quite fully into the question of the working of thin seams, concluded that beds as thin as 1 ft. might be worked by the aid of coal-cutting machines. It also pointed out what is well known among all engaged in or connected in any way with the coal industry—that the use of coal-cutting machines has enabled coal from thin beds to be placed upon the market. This coal could not otherwise

method universally adopted is as follows: A length of face is cut during the night shift and is loaded out and sent to the surface during the following day shift. In the early days of coal-cutting machines, before "Mahon" had visited America and had seen how much use was made of the machines there, mine managers complained that any economies obtained by machine-cutting were often lost through the heavy cost of loading the coal into the mine cars.

With machine mining in thin seams, however, the problem of loading the coal into cars is a serious one. In order that the coal may be got away from the face quickly, and that there may be a continuous stream of cars going toward the shaft bottom, it is necessary that a large number of gate roads be made. In longwall working it will be remembered, the cars are led from a branch road, through gate roads to the face, and along this or through other gate roads back to the branch road, from which they are dispatched to the shaft bottom. The roof in

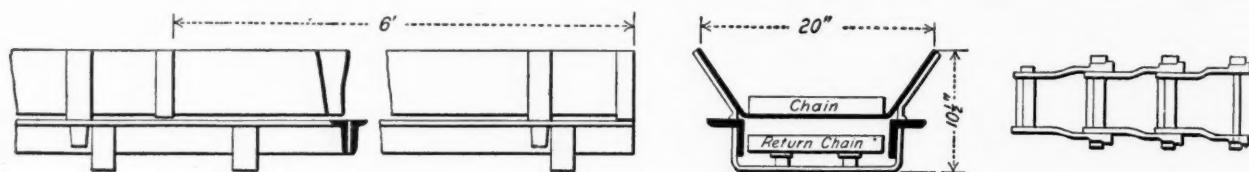


FIG. 1. LONGITUDINAL AND TRANSVERSE VIEWS OF BLACKETT CONVEYOR

have been used. Numerous instances have occurred where the price for undercutting by hand was absolutely prohibitive, but by the aid of coal-cutting machines the seam has been brought within the range of market prices.

Practically all the thin beds in the United Kingdom are worked by the longwall method. The coal faces range from 100 up to 900 yd. in length. The length of face necessarily varies with the district. In West Yorkshire, where coal-cutting machines have been employed to a greater extent and for a longer time than in other districts, long faces are the rule; while in the west of Scotland, which was also well to the fore in the adoption of coal-cutting machines, faces of about 100 yd. predominate.

The 100-yd. face was adopted, I believe, because the machines could cut across that length in one shift. The

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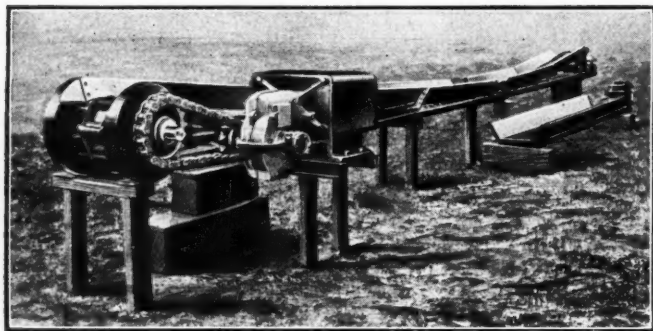


FIG. 2. BLACKETT CONVEYOR SET UP ON THE SURFACE

the gate roads is supported by pack walls, sometimes assisted by timber. Between the pack walls of adjacent gate roads it is allowed to come down.

The problem of keeping the gate roads open, and in particular of keeping up the supply of electric current or of compressed air to the coal-cutting machines, where the cables and air pipes pass through several air tubes, is a difficult one. To load the coal into the mine cars, and handle the loads and empties is also difficult.

The almost natural outcome of this state of things is the development of machinery; and almost equally natural is it that the idea of the first machine to overcome the difficulties of the problem came from America.

At the present time there are a number of conveyors upon the market arranged to receive the coal at the face, deliver it into mine cars standing in gate roads at the ends of the face, and sometimes to carry the coal through the gate roads. The arrangement has permitted the use of a smaller number of gate roads, thus securing economy in working. The employment of the face conveyor has also, like that of the coal-cutting machine, led to other advantages, such as a greater percentage of large coal, a decreased cost of handling, a more even progress of the face and a more uniform stream of filled cars moving to the shaft bottom.

The first coal-face conveyor, I believe, was the joint invention of Clarence Claghorn, an American mining engineer, and W. C. Blackett, the manager of a large coal operation in the County of Durham. I understand that Mr. Claghorn had been obliged for several reasons to employ the longwall method of working at the Vinton

Colliery in Pennsylvania; and that the difficulties of handling the coal after it had been undercut and brought down, which have been detailed before, was so impressed upon him that he proceeded to work out jointly with Mr. Blackett the first apparatus that was put upon the market.

As in every other case in my experience, the successful working of the Blackett face conveyor has led to several other forms of conveyors being worked out and

In the Blackett conveyor troughs of the form shown in section in Fig. 1 are made in 6-ft. lengths. Each trough is supported by two feet, consisting of steel bars bent to the form shown in the figure. The troughs with their supporting feet rest upon and are held by an angular framework, as shown. The angle irons are supported in their turn by transverse straps bent to the form of a wide, shallow U. The complete apparatus assembled on the surface is shown in Fig. 2.

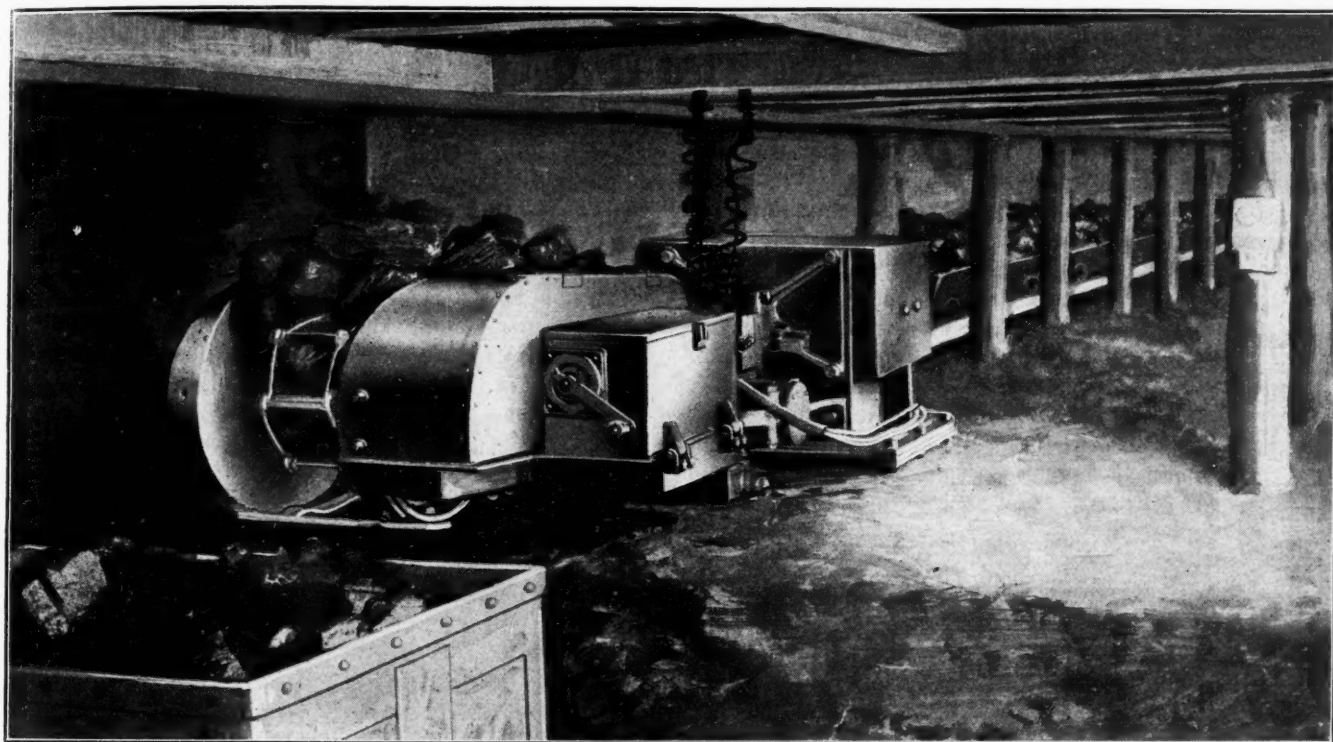


FIG. 3. BLACKETT FACE CONVEYOR DISCHARGING COAL TO CAR

placed upon the market. The following are the forms at present in use:

1. The chain and trough conveyor, in which the coal is carried by an endless chain running in troughs provided for the purpose. This is the Blackett conveyor and is illustrated in Figs. 1, 2, 3 and 4. It is described more fully farther on in this article.

2. The belt conveyor, in which an endless belt made of various materials runs continuously along the face, the moving belt performing the same work as the endless chain. This method will be recognized as an adaptation of the belt conveyors that are in use in electric power stations and elsewhere for conveying coal to the bunkers; and also in grain warehouses for handling quickly large quantities of grain.

3. The shaker or jigger conveyor. This again is an adaptation of an apparatus of German origin that I believe has been in use for a long time for transporting coal upon the surface.

4. The moving tray, or trough, conveyor. This is apparently a new departure. The whole of the tray, or trough, moves along the coal face as described later, and delivers to mine cars at a central point.

5. The moving chain conveyor, without trough or other accessories. This will be recognized as a development of the apparatus in which a chain moves inside of a number of troughs.

One advantage that is claimed for this conveyor is the speed with which it can be put together. The angle iron framework is made with adjoining ends overlapping; the end of one angle iron carries a peg, or dowel, which passes through a hole in the other frame and is held there by a split ring. It will be seen that this arrangement enables a length of troughing and its underframe to be put together very quickly. The underframe is first laid, and the troughing with its feet is simply

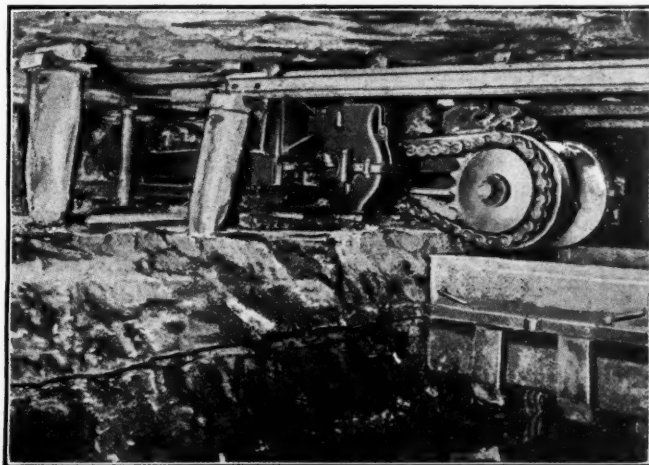


FIG. 4. DRIVING MECHANISM OF THE BLACKETT CONVEYOR

dropped into its place therein. One-half of an endless chain with links of the form shown in Fig. 1 runs along the bottom of the trough, the return half running on rollers supported by the angle-iron framework.

The links of the chain also carry scrapers. When at work the lumps are carried on the chain, while the slack

of the wheel gearing and the head sprocket. The motors driving the conveyor are capable of furnishing up to 16 hp. The power necessarily varies with the conditions of working. It is claimed that in some cases it is as small as 6 hp., while in a few instances, particularly with worm gearing, it may be as much as 10 hp. The weight

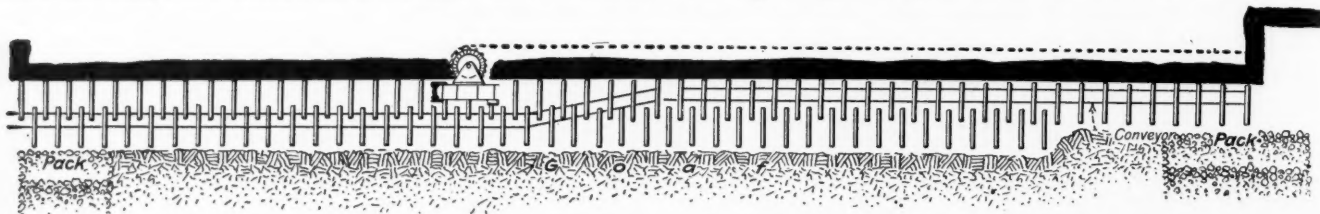


FIG. 5. COAL FACE SHOWING CONVEYOR BEING MOVED UP AFTER MINING MACHINE

is drawn forward by the scrapers attached to the links. The chain is driven either by an electric motor or a compressed-air engine, the driving mechanism in either case being fixed at the discharge end of the trough. Either continuous- or alternating-current motors may be employed. Where a direct-current motor or a compressed-air engine is used it is placed under the discharge end of the trough, the starting switch being on the side convenient to the man in charge. When an alternating-current motor is employed it is fixed by the side of the trough. The electric motors are totally

of the motor and gearing provides the anchor at the discharge end, the opposite end being held by a screw-tightening arrangement attached to a mooring chain secured to timber.

Figs. 5 and 6 show the coal-cutting machine in the act of cutting along the face and the conveyor being moved forward when the machine has advanced far enough. Fig. 7 is a section of a 3-ft. coal bed with 1 ft. of fireclay below it in which the undercutting is done.

It will be noticed that there are four lines of props. One close to the face which is removed and replaced as

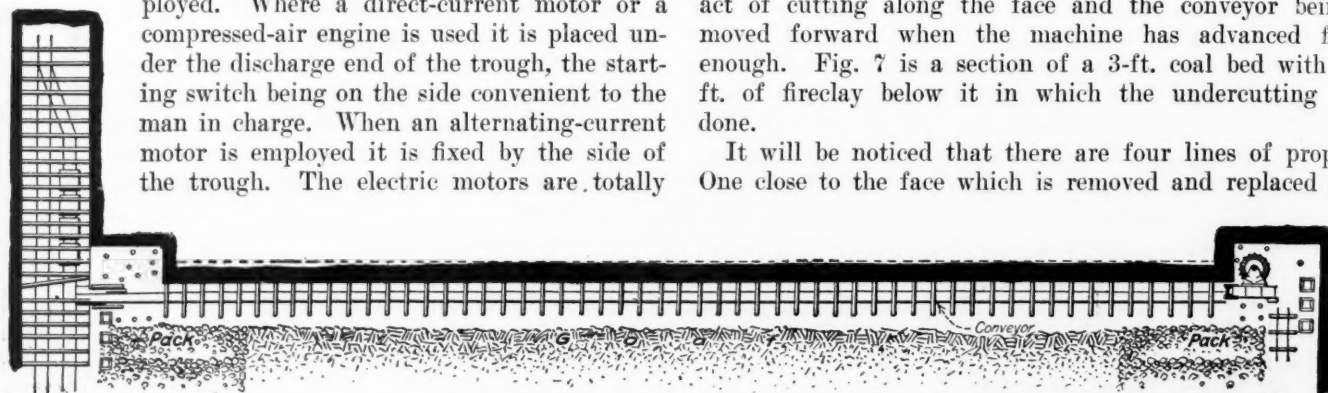


FIG. 6. COAL FACE SHOWING RELATIVE POSITION OF CONVEYOR AND GATE ROAD

inclosed and in all cases are arranged to be moved with the end section of the conveyor.

Provision is made to avoid accident to the motor in case of anything getting fast and the motor not having sufficient power to overcome it—while the current passing through its coils may be of a dangerous heating strength—by the shearing of a copper key that is inserted between two driving disks placed outside of the gear case, so that this key can be easily replaced. The

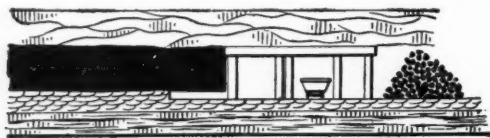


FIG. 7. CONVEYOR READY TO BE MOVED

slow speed required for the chain is obtained by interposing either spur or worm gearing between the motor and the sprocket round which the chain is carried. The conveyor discharges the coal carried by the chain links and that brought by the scrapers into the mine cars waiting below it, as shown in Figs. 3 and 4.

In addition to worm or spur gearing a Renold chain and sprocket wheels are employed between the last member

the coal-cutting machine passes, one line behind the machine, a third line behind the conveyor which is shown waiting to be moved up to the face, and a fourth line behind which the roof is allowed to break and settle down to form the goaf. Fig. 8 is a longitudinal section of a coal face with a Blackett conveyor in position. It will be noticed that there is a gate road at each end of the face, a mine car being in position in the road on the left.

In Fig. 6 the gate road on the left along which the mine cars are brought has two lines of track with a cross-over beyond the coal face. This is necessary in order that there may be a continuous supply of empty cars coming up to the end of the face and of full cars passing to the shaft bottom. Each car as it is filled is pushed forward and a trip made up on the return road and hauled to a branch road.

Fig. 9 is another section of a 3-ft. seam with 1 ft. of fireclay below. In this illustration it will be noticed that there are three lines of props and that the conveyor is shown close up to the face, while the roof is breaking away behind the third line of timbers.

The height of the Blackett conveyor from the top of the troughs to the bottom of the supporting framework is about 10 in. The head and tail sprockets are higher.



FIG. 8. LONGITUDINAL SECTION OF COAL FACE WITH CONVEYOR IN POSITION

but they will easily go into a 2-ft. space, so that seams down to that thickness can be worked with it. The overall width of the conveyor is 20 in.

The Blackett conveyor is recommended for seams less than 2 ft. in thickness with good roof and floor. The

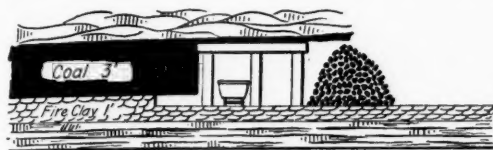


FIG. 9. CONVEYOR MOVED FORWARD TO FACE

usual working length is from 60 to 120 yd. Fig. 10 shows one at the middle of the face.

The Sutcliffe universal belt face conveyor is the invention of Richard Sutcliffe, who was a mine manager before taking up the manufacture of coal-cutting machines. He has developed a number of devices that enable coal to be more easily and cheaply worked.

In the Sutcliffe conveyor cotton belting is employed. This belting is nailed on its edges in a special manner

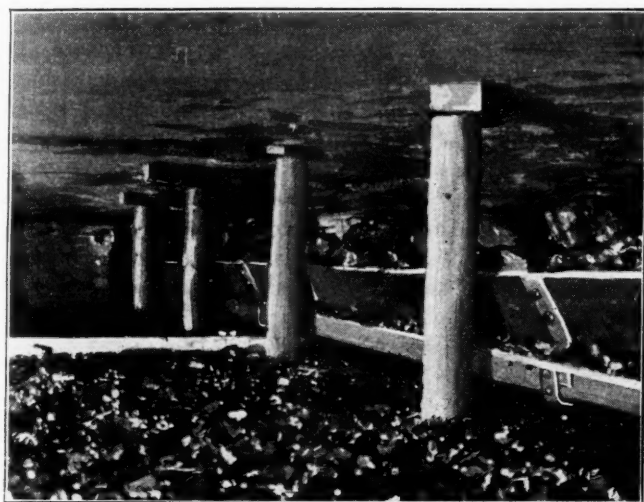


FIG. 10. VIEW NEAR MIDDLE OF A BLACKETT CONVEYOR

that has been worked out by the inventor and that is designed to prevent abrasion. The belt is made up of two or more lengths as convenient, the adjacent ends of two lengths being connected by hinged joints with a pin running through the hinge. By withdrawing the hinge the belt can be quickly divided into its separate lengths. It can, also, be re-made into its full length in a short

time. A common length for the conveyor is 100 yd., the belt consisting of two 300-ft. lengths joined together as just described.

Where the roof is tender, shorter lengths are advised, to be made up as convenient to meet each particular case. In some instances the conveyor reaches to 200 yd. in length. At each end the cotton belt rests on drums 13 in. in diameter. Power is applied to the driving drum either by an electric motor or an engine operating on compressed air. The body of the belt, both the upper and lower parts, rests on rollers. These rollers are carried by brackets or standards fixed 9 ft. apart. The brackets also carry angle irons, which form the bed for the belt to rest upon, in the middle of the length between each pair of standards. The angle irons carry bearings in which the rollers are held, so that the loaded belt is supported by rollers every 4½ ft.; one roller being on the bracket or standard and the next between the two standards.

The return belt is carried on rollers which are held in the standards only, so that it is supported at every 9 ft. The belt runs quite clear of everything except the rollers and the driving drums.

The arrangement of the belt at the driving end is as follows: There are two drums to which power is applied from the engine or electric motor; the belt passes round these two drums and round an idle roller or jockey pulley designed to turn the belt in the proper direction on its return path. Fig. 11 shows the Sutcliffe conveyor as set up in the workshop. The total height of the belt is 11 in. along the face, the height of the tops of the standards and the angle iron being 13 in. The tops of the drums at the driving end stand 16½ in. above the floor.

The angle irons are held to the standards by the following arrangement: On each side of each standard are two slots arranged to take ⅞-in. bolts. Each piece of angle iron has two countersunk holes, one at each end and of a size necessary to carry the ⅞-in. bolts. These bolts drop into the slots of the standards through the holes in the angle iron and are screwed down tightly, the sides of the standards forming the joints between successive lengths of angle iron.

The coal is placed on the conveyor by hand and delivered into the mine car standing in the gate road. It simply tumbles over the end, as is the case with the Blackett conveyor. Mr. Sutcliffe has also arranged a combined system of coal-face and gate-road conveyors.

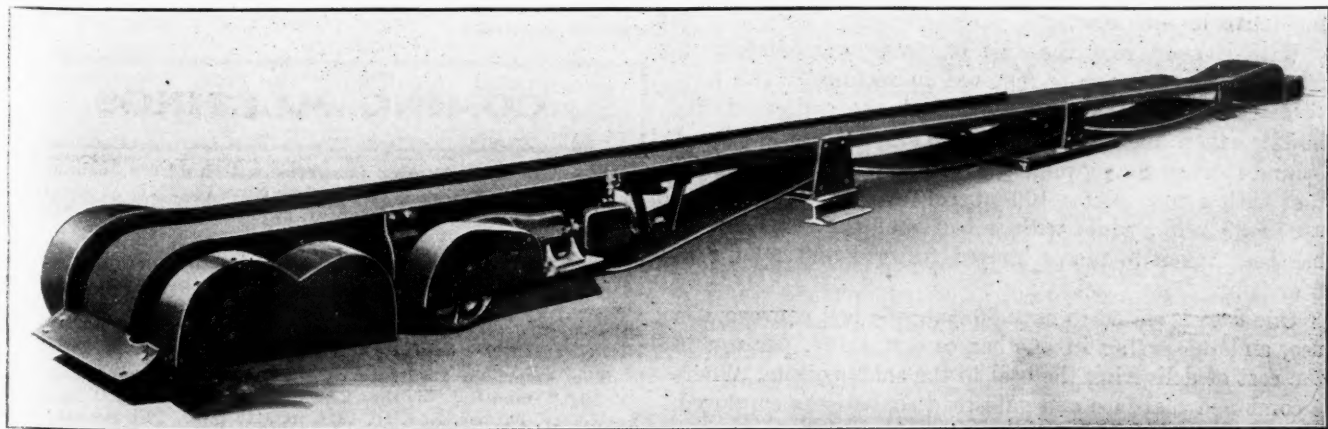


FIG. 11. SUTCLIFFE CONVEYOR ASSEMBLED ON THE SURFACE

Gate roads are sometimes steep and necessarily narrow, so that keeping a double track for the cars in them is difficult and expensive. In these cases the gate-road conveyor may be employed, delivering the coal to mine cars waiting for it in the branch road at the end of the gate road. Fig. 12 shows a combined coal-face and gate-road conveyor set up in the workshop.

CONVEYOR DOES NOT INJURE THE COAL

The coal-face conveyor delivers to the gate-road conveyor. The arrangement of the two conveyors is similar, and it is sometimes arranged to drive both machines from the same engine. The belt of the coal-face conveyor usually runs at 50 ft. per min., and will then deliver from 20 to 25 tons per hour. It is claimed that it does not grind or injure the coal in any way, but merely conveys it.

The rate of travel of both face- and gate-road conveyor can be increased if required, this being merely a question of providing a little more power. The coal-face conveyor

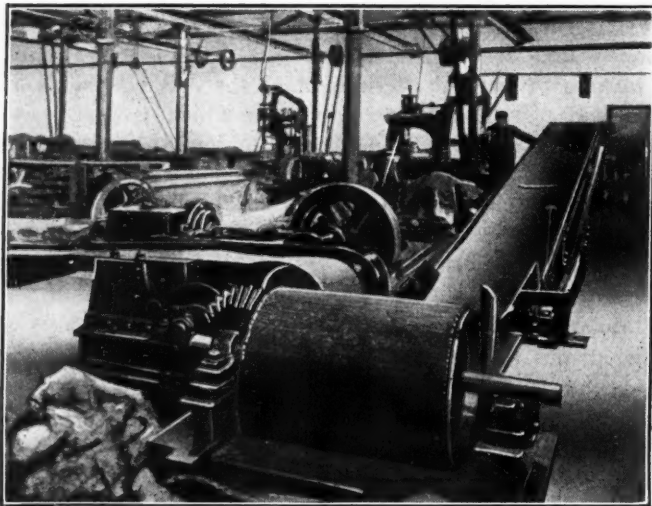


FIG. 12. SUTCLIFFE FACE AND GATE-ROAD CONVEYORS ASSEMBLED IN THE SHOP

follows the face as it moves forward. It is claimed that with the Sutcliffe belt conveyor the props need not be removed when the belt is being shifted forward, if the tenderness of the roof makes it advantageous not to move them. When the conveyor moves forward under conditions of tender roof, the belt, angle irons, standards, etc., are broken up into sections, each being moved forward between the props. The whole is then set up again ready for delivering the coal.

With a good roof the line of props immediately in front of the conveyor is removed in sections. The conveyor is moved forward bodily, first one end, then the middle, then the other end, the props being replaced behind it when the movement is completed. It is claimed that with a good roof a 100-yd. conveyor has been moved up in 35 min., while with a bad roof the same length has been taken to pieces, moved forward and rebuilt in 2 or 3 hr.

One firm is stated to have 30 Sutcliffe belt conveyors in use, and the saving in another case was 10c. per ton in the cost of delivering the coal to the shaft bottom. Where a combined coal-face and gate-road conveyor is employed, the gate-road conveyor is lengthened as the face moves forward, until the crossgate moves up nearer the face.

Illinois Coal Resources

Illinois will be kept warm for some time to come. From recent studies which have been made by the Illinois State Geological Survey in cooperation with the United States Bureau of Mines and the Department of Mining Engineering, University of Illinois, it is estimated that in Franklin, Williamson and Jefferson Counties alone, coal No. 6 originally contained 8,732,000,000 tons, of which only 206,000,000 tons, or 2.35 per cent., has been mined. The amount of coal represented by 8 billion tons is equivalent to the total production of the United States to the end of 1910. At the present rate of production and with the present proportion of recovery, this volume of coal would supply Illinois for about 80 years. It is not improbable that there is nearly as much coal available in the other beds as was originally available in coal No. 6. A complete report on the geology and coal resources of District VI has just been published as Bulletin No. 15.

Since a large amount of coal is now being purchased on the heat-unit basis, much interest is manifested in the methods of determining the true quality of coals and of comparing one with another. Bulletin No. 3, on the Chemical Study of Illinois Coals, has just been issued by the State Geological Survey, in connection with the agencies mentioned above. The report describes the most recent developments in methods of mine sampling and chemical analysis. It also contains a large number of analyses of coals from mines throughout the state.

Bulletin 3 may be had upon payment of 4c. postage to the Director, State Geological Survey, Urbana, Illinois. Bulletin 15 will be sent at the parcel post rate for 1 lb. The two bulletins will be mailed together at the parcel post rate for 2 lb.

IN LIGHTER VEIN

PAT IS A BOOSTER FOR SAFETY

Edwin C. Curtis, a safety inspector for the Susquehanna Coal Co., told this story to the Nanticoke District Mining Institute recently:

Pat and Mike were given a breast on the pitch. They took their tools to the place, drilled a hole in the coal, charged it, lighted the squib, and went down to the gangway. The shot eventually went off and the coal began to work across the face of the breast and run down the pitch to the platform. The men waited on the gangway listening to the working of the face for quite a long time. When the place became quiet, Mike said to his companion, "What'll we be after doing now, Pat?" Pat thought deeply for a moment and then made this answer, "You sneak up and trim th' face, Mike, and I'll go fitch th' ambalance."

COMING MEETINGS

The American Mining Congress will hold its 19th annual session during the week beginning Nov. 13, 1916, at the Hotel La Salle, Chicago, Ill. Secretary, James F. Callbreath, Munsey Building, Washington, D. C.

Illinois Mining Institute will hold its fall meeting Nov. 25, 1916, at Springfield, Ill. All those interested in coal mining should attend this meeting. A fine program has been arranged, the banquet in the evening being held at the St. Nicholas Hotel. Secretary, Martin Bolt, Springfield, Ill.

The American Institute of Electrical Engineers will hold its 326th meeting in the Engineering Societies Bldg., New York City, Friday, Nov. 10, 1916, at 8:15 p.m. The general subject of the meeting will be Inventories and Appraisals. Secretary, F. L. Hutchinson, 33 West 39th St., New York City.

Concluding Sessions of National Safety Council

By R. DAWSON HALL

SYNOPSIS—*The Mining Section of the National Safety Council held a second session on Oct. 19 at which seven interesting papers were presented. The banquet of the whole Council drew a large attendance and speakers of more than ordinary power. The first-aid contest on Oct. 20 was won by the Bliss Coal Co., of Saginaw, Mich.*

In the issue of *Coal Age*, of Oct. 28, pp. 716-719, an account was given of the general session of the National Safety Council and of the first session of the Mining Section which occupied the whole of Oct. 17 and 18.

On the following morning, Oct. 19, the mining section met to hear the paper of O. P. Hood, chief mechanical engineer, United States Bureau of Mines, Pittsburgh, Penn., on "Safety in Hoisting and Slope Haulage."

The question arose as to the relative value of flat and round ropes. According to Prof. F. W. Sperr a flat rope should be used when the fleet of round rope would be more than 1 in 100. A flat rope is desirable when the head-frame room is restricted. Mr. Tillson said that there was much difficulty in the sewing of flat rope, and at an isolated plant it was not possible to keep capable men for this occasional work, especially when the mine is small. Mr. Hood said that the sewing wire was a sort of safety signal. If it failed, it was a sign of and point of relief for excessive strain, and the sewing thus acted as did a safety driftpin in certain agricultural machinery.

HOW TO MIX MEN OF DIFFERENT NATIONALITIES

E. E. Bach's paper on "Welfare Work" then followed, William H. Jobe, mine inspector of Crystal Falls, Mich., not being present to speak on "Mine Inspection." The discussion was largely on the possibility of mixing nationalities at the company clubhouses. Mr. Pettibone declared that they were quite successful at the mines of Pickands, Mather & Co. in bringing all the foreigners to associate in the social activities which have been introduced. E. E. Bach said that at the Ellsworth Collieries Co.'s mines this commingling was not attempted. The clubrooms were open free to persons of any nationality who desired to meet for proper purposes. The clubhouse was not by any means used by white-sleeved persons only.

Oscar Cartlidge's paper on "Mine Rescue Apparatus—Its Value as a Safety Measure," was read by J. W. Paul. That on "Mine Fires and Their Recovery," by Prof. J. C. Roberts, professor of safety and efficiency engineering, Colorado School of Mines, Golden, Colo., was not presented.

Prof. F. W. Sperr, of the School of Mines, Houghton, Mich., read a paper on "Metal Mine Accidents and Their Prevention." He said that many accidents were alleged to be due to carelessness which were not really chargeable to any such fault. We are too apt to allege culpable and deliberate carelessness, but such a loose way of joining unrelated causes is dangerous, for the cure of evils is only possible if we rightly understand them. The

"moral hazard," as it is somewhat misleadingly called, covers forgetfulness of danger, momentary distraction, miscalculation and misjudgment, desire to take short cuts thus saving time and labor, desire for the excitement accompanying danger, and the wish to show dexterity. Real negligence consists chiefly in the leaving off of gates and guards. Such carelessness should be heavily penalized, but some of the momentary distraction too often mislabeled "carelessness" is far from culpable. The man may have the best of intentions, and these intentions may so occupy his mind, that he has no thought for danger.

William Connibear's paper on the "Education of Miners in Safety," laid stress on the necessity of regarding safety work not merely as the supplying of safety appliances but as the inculcation of a creed.

DECLARES FIRST-AID COMPETITIONS HARMFUL

Mr. Price read a paper prepared by Mr. Boardman in which the present system of competitive first-aid work was assailed. The author of the paper said that in the present method six men were overtrained and the rest were neglected; that as a result the other men in the mine hesitated to do first-aid work in mine accidents because they felt they were not competent, and thus much-needed work was not done promptly; that the money spent was not distributed equally among the employees; that the cost was out of all proportion to the result obtained, and that the competitive system was the source of much bad feeling.

The author proposed awards for actual work in the saving of life. These awards were to be given on certification of the doctor that the work was well done and was efficacious in saving life and shortening pain and in reducing the length of the period during which the victim was incapacitated. He recommended the giving of medals instead of money, and urged that demonstrations of skill replace the usual contests.

The article by C. E. Pettibone, safety inspector of Pickands, Mather & Co., of Cleveland, Ohio, on "Testing Rescue Apparatus," was one of the best presented at this session. He advocated putting a pressure of 5 oz. of water on the apparatus. He said that the best of breathing equipment would not hold such a pressure indefinitely, but a safe apparatus would retain the pressure without appreciable loss for one minute. If the test were given once a month and the apparatus maintained the 5 oz. pressure for 1 min., the equipment could be regarded as available at all times for use.

Edward Steidle said he believed the smokehouse test was one never to be neglected. Mr. Pettibone's test, however, was a good one and might serve for some purposes. H. I. Smith declared that while the test proved the tightness of the apparatus, it did not show that the nose clip was airtight, so it was not a real test of the apparatus as worn, though it might be all right as a test of the apparatus as ready for service.

Mr. Pettibone urged that it was a better test than the smokehouse test, which was not sufficiently sensitive unless

the men remained in the smokehouse for some time. The pressure proposed—5 oz.—was far higher than was obtained in working practice, and therefore the apparatus which would prove up under his test should be reliable under the severest smokehouse test—a method of examining equipment which by actual experience he had learned would not enable the wearer to detect minute punctures. Edward Steidle replied that the wearer of an apparatus could raise the pressure up to 5 oz. by exerting himself greatly, with which statement Mr. Pettibone found it impossible to concur.

J. W. Paul said that he could not agree with Mr. Pettibone in his statement that the test for oxygen supplied was relatively unimportant. It was true as Mr. Pettibone said that the bypass furnished a way of procuring oxygen as needed, but if more was taken than really required the oxygen supply was too early depleted. He also urged that some men in their excitement forgot to operate the bypass valve and thus became distressed. He stated that the Bureau of Mines was contemplating the issue of a bulletin recommending the use of the mouthpiece and nose clip and a discontinuance of the use of the helmet, which was found to permit the entrance of poisonous gases.

MOORSHEAD EMPHASIZES NEED OF ORGANIZATION

A. J. Moorshead, president of the Madison Coal Corporation, spoke briefly on the importance of organization in mine-rescue and fire-fighting work. He spoke quite feelingly about his colored teams of rescuers. They could not enter competitions and win prizes, but he did not believe there were any braver or better men anywhere.

The banquet in the evening drew 561 members out of the 2,500 at the convention, and all these could not be accommodated in the large banqueting room of the Hotel Statler where the banquet was held. The toastmaster was Alfred T. Morey, the president of the Council. He is an excellent presiding officer. R. C. Richards was the first speaker introduced. As chairman of the Central Safety Committee of the Chicago & Northwestern Ry., a railroad which led all others in the safety movement, he was one of the pioneers in the propaganda relating to the preservation of human life and became one of the many persons to whom the invention of the slogan "Safety First" was attributed. He disclaimed, however, all title to its authorship and named R. J. Young, manager of the Department of Safety and Relief of the Illinois Steel Co., who was present, as the real inventor of that "form of sound words." Hitherto Judge E. H. Gary has been the only honorary member of the Council. At the banquet R. C. Richards' name was added thereto.

James Schermerhorn, editor of the *Detroit Times*, as the second speaker proved both witty and interesting. He has an unassuming way of speaking which gives his droll observations no little point. Franklin H. Wentworth, secretary of the National Fire Protection Association, Boston, Mass., who succeeded him, was not a whit less able but more serious. He emphasized the fact that the trend of modern life was toward activity and still more activity—a constant desire to effect something regardless of the value of what was effected. He took as the background of his remarks Goethe's statement that activity without insight is not worth while and urged that an industry that makes needless cripples in its haste for production does not rightly appraise the reason for its being.

The new officers of the Council, as selected by the directorate, were announced at the banquet:

President, L. R. Palmer, chief inspector, Pennsylvania Department of Labor and Industry, Harrisburg, Penn.
First vice-president, David Van Schaak, Director of Publicity, Aetna Life Insurance Co., Hartford, Conn.
Second vice-president, H. W. Forster, chief engineer, Independence Inspection Bureau, Philadelphia, Penn.
Third vice-president, Marcus A. Dow, general safety agent, New York Central Lines.
General manager and treasurer, W. H. Cameron. Assistant secretary, J. J. Lamont. Editor, E. R. Wright. Field secretary, C. W. Price.

The Ford Motor Co. very cleverly exhibited moving pictures of the principal officials, mostly of a humorous character.

In the afternoon of Oct. 20 a first-aid meet was held at the Armory, in which 16 teams competed. The teams competing and their averages for the three events held were as follows:

The Bliss Coal Co., Saginaw, Mich.	97
Pennsylvania Coal and Coke Corporation, Patton, Penn. (Hastings mine)	96½
Tunnel Coaling Co., Gallitzin, Penn.	96½
Clinton Coal Co., Clinton, Ind. (Crown Hill Mines)	96
Smoky Hollow Coal Co., Hiteman, Iowa (Mine 10)	95½
Bunsen Coal Co., Universal, Ind.	95
Anaconda Copper Mining Co. (Raritan Copper Works)	95
Delaware, Lackawanna & Western R.R., Coal Department (Auchincloss colliery)	93½
Consolidated Coal Co., Bay City, Mich. (Wolverine No. 2)	92½
Consolidation Coal Co., Somerset, Penn. (Pine Hill, Mine 113)	92
Vandalla Coal Co., Terre Haute, Ind. (No. 15, Cass, Ind.)	91½
Ebensburg Coal Co., Colver, Penn.	91½
Consolidation Coal Co., Elkhorn Division, Jenkins, Ky.	91½
Delaware, Lackawanna & Western R.R., Coal Department (Bliss colliery)	89½
New Jersey Zinc Co., Franklin, N. J.	87½
Merchants Coal Co., Pittsburgh, Penn. (Orenda Team of Boswell, Penn.)	87

The events were as follows:

One-Man Event—Four fingers of left hand severely crushed, with lacerated wound of palm of hand which is bleeding profusely. Treat and carry patient 20 ft. by shoulder lift. Time allowance, 8 min.

Two-Man Event—Severe steam burns on face, neck, ears and both hands. Treat and carry patient 20 ft. without a stretcher. Time allowance, 8 min.

Full-Team Event—Broken back with simple fracture of right forearm. Treat and prepare for transportation.

The one-man event was won by the Pennsylvania Coal and Coke Corporation, Patton, Penn. (Hastings mine), and the two-man event fell to the Clinton Coal Co., Clinton, Ind., Crown Hill mines. These received Red Cross medals. A loving cup, the gift of the National Safety Council, was presented in perpetuity to the Bliss Coal Co. team as the winner of the best average in the three events. The members of the team also received silver medals from the Council and other medals from the American Red Cross.

The Pennsylvania Coal Corporation team which, as stated, had the second best average, received bronze medals from the National Safety Council and certificates from the American Red Cross. The Tunnel Coaling Co. team, for being third in its average, received Red Cross certificates.

The prizes donated by the National Safety Council were presented by Arthur T. Morey, the president, and those of the American Red Cross by Elliot Wadevorth, acting chairman of that organization. The judging was in charge of Major Patterson, of the American Red Cross.

During the whole period that the National Safety Council was in session a Commercial Exhibit was held in the Detroit Armory, at which 43 companies exhibited, including the New Jersey Zinc Co. The exhibits largely pertained to safety in mining and every afternoon the interest was enhanced by exhibits of first-aid work. In this latter work the Bliss and Auchincloss teams of the Delaware, Lackawanna & Western R.R., Coal Department, took an important part.

Making a Cost Profile

By P. L. MATHEWS*

SYNOPSIS—Cost keeping is often considered an accountant's rather than an engineer's job. This article outlines a method whereby a mine official may readily compare mining expenses from month to month and determine how near he is approaching to a predetermined "standard of excellence."

There are, no doubt, many men responsible for the operation of coal mines who feel the need of an adequate cost system that shows in detail a comparison, from month to month, of the expense of the various operating departments.

The narrow margin which often exists between the operating expense and the selling price of coal in many cases forces the question of cost into the position of first importance.

Every conscientious manager recognizes the necessity of a persistent study of costs in order to effect economies and stop the leaks which present themselves. But the difficulty in getting a system which is both simple and effective prevents the attention this subject deserves.

The average mine manager or superintendent is generally a man whose chief training has been on the operating side of mining, and the very nature of his work precludes much disposition for accounting or bookkeeping. Yet it is often the case that a cost-keeping system requires the services of an expert accountant to dig out the points of value from a maze of figures. Gillette describes such systems as "bookkeeping gone mad," and it is undoubtedly true that any system of costs loses much of its value when it depends on the functions of bookkeeping rather than those of engineering. In order to bring a cost-keeping system more into the province of the engineer or superintendent, I have been using the method described below and venture a detailed description in the hope that it may be of some benefit to others. The first step in starting this system requires that the following data be given:

- Capital invested.
- Minimum percentage of interest required to make the mine profitable.
- Average output per month.
- Selling price of product.

For the purpose of illustration, a mine will be assumed in which this data is as follows:

Capital invested	\$300,000
Minimum percentage of interest.....	10
Average output per month, tons.....	10,000
Selling price of coal.....	\$2

Hence:

Gross earnings per month.....	\$20,000.00
Maximum permissible operating expense per month, 10 per cent. of \$300,000.....	\$30,000
..... 12	17,500.00
Maximum permissible operating expense per ton....	1.75

*Santo Tomas, Tex.

The \$1.75, therefore, represents the maximum operating expense that can be allowed per ton and have the mine on a paying basis.

The operating expenses of the mine are now divided into the following accounts, which in turn are subdivided into the subjects shown in order to facilitate the distribution of expense:

- Supervision:**
Superintendent
Mineboss
Fireboss
Mine office
Warehouseman
Watchman
Engineering

Cleaning and Handling:
Tipple labor
Weighman
Loaders
Tipple machinery

Deadwork:
Bottom
Entries
Room turning
Mine drainage
Clay

Haulage:
Mine track
Mine cars
Cagers
Mules and drivers
Signal system
Coal hoist and cages
- Mining:**
Coal diggers
Faults
Timber
Undercutting machinery
Machine runners

Surface Plant:
Fire protection
Buildings
Surface drainage
Wagon
Wagon roads
Fences
Main shaft

Power:
Boiler plant
Electric plant
Water-supply

Ventilation:
Breakthroughs and crosscuts
Doors and doorkeepers
Blowers
Air shaft and fan

General:
General office
Stationery
Selling force

These accounts and the subdivisions are of course arbitrary and may be changed to suit the conditions. The

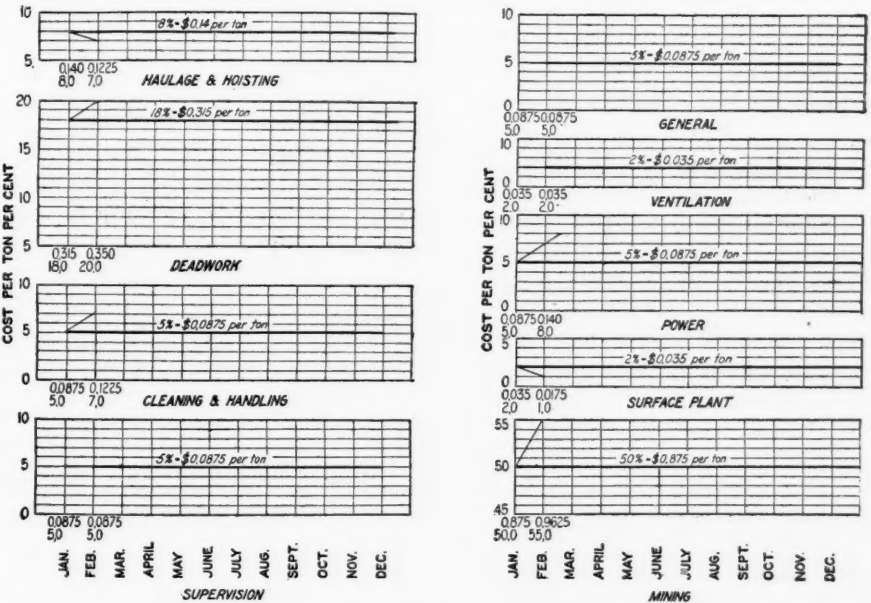


FIG. 1. THE COST PROFILE FOR AN ASSUMED CASE

point is that the accounts and subaccounts must cover all the items that enter into the operating expense, and this expense must be properly distributed among them.

The maximum permissible operating expense of \$1.75 a ton is now apportioned in percentages to these accounts. The manager from previous cost records can make a close, if not an exact, distribution of the percentage of the operating cost these accounts carry. In case exact percentages can not be obtained, an arbitrary division by no means detracts from the value of the profile, as it should be borne in mind that the percent-

ages assumed are merely a "grade line," so to speak, to which the actual costs are compared.

The real value of the profile lies in this comparison. Nearly every manager has what might be termed a "standard of excellence" for which he is striving. In many cases his conception of this standard is somewhat hazy, but he knows that if everything "broke right for him," he should be able to get coal out for a certain specified cost per ton.

The idea of the profile is to translate this ideal to a tangible figure to which actual performance may be compared, and compared in detail so that wherein it falls short may be found precisely. While I have suggested the method of arriving at this figure by using the percentage of interest required on the investment to make the mine pay, it will be seen that the figure can be just as well set at what is believed to be the best performance possible.

It will be assumed, then, that the operating expense of the mine is distributed to the accounts as follows:

Per Cent.		Per Cent.	
Supervision	5	Power	5
Cleaning and handling	5	Ventilation	2
Deadwork	18	General	5
Haulage and hoisting	8	Total	100
Mining	50		
Surface plant	2		

With this information, a profile is now made to any convenient scale, as shown in Fig. 1, with these percentages plotted as heavy lines. The line thus drawn represents the position to which the actual performance should conform.

Monthly statements of the operating expense are now made, the expense being distributed to these accounts in somewhat the following form:

OPERATING EXPENSE, JANUARY, 191-
Output, 10,000 tons

	Ordinary Repairs		Total	Per Ton		Total
	\$875	....	\$875	\$0.0875	....	\$0.0875
Supervision						
Cleaning and handling	800	\$75	875	.08	\$0.0075	.0875
Deadwork	2,450	700	3,150	.245	.07	.315
Haulage and hoisting	1,200	200	1,400	.12	.02	.14
Mining	8,000	750	8,750	.80	.075	.875
Surface plant	300	50	350	.03	.005	.035
Power	800	75	875	.08	.0075	.0875
Ventilation	300	50	350	.03	.005	.035
General	800	75	875	.08	.0075	.0875
	\$15,525	\$1,975	\$17,500	\$1.5525	\$0.1975	\$1.75

It will be supposed that the statement for the following month shows:

OPERATING EXPENSE, FEBRUARY, 191-
Output, 10,000 tons

	Ordinary Repairs		Total	Per Ton		Total
	\$875	....	\$875	\$0.0875	....	\$0.0875
Supervision						
Cleaning and handling	1,000	\$225	1,225	.10	\$0.0225	.1225
Deadwork	2,000	1,500	3,500	.20	.15	.35
Haulage and hoisting	1,200	225	1,225	.12	.0025	.1225
Mining	9,000	625	9,625	.90	.0625	.9625
Surface plant	175	175	350	.0175	.06	.0175
Power	800	600	1,400	.08	.06	.14
Ventilation	300	50	350	.03	.005	.035
General	800	75	875	.08	.0075	.0875
	\$16,150	\$3,100	\$19,250	\$1.615	\$0.31	\$1.925

The figures in the last columns, which represent the cost per ton, are now divided by \$1.75, which gives their percentage of this figure. These percentages are plotted under their respective accounts on the profile. Referring to the figure, it will be noted that the "elevation" of the percentages for February immediately determines how the operating expense stands in relation to the previous month and also how much it failed to meet the standard shown by the heavy line.

The profile is kept up from month to month as illustrated and will be found to give an accurate knowledge of how the mine progresses, showing in what department improvements are necessary and how much such improvements lower the cost after they are made. This is the result desired, since the main object of any cost system is to show efficiency.

■

American Mining Congress

The program for the nineteenth annual convention of the American Mining Congress, which opens at Hotel La Salle, Chicago, Nov. 13, is now practically complete, and the general as well as the section meetings will be of unusual interest and value to mining men in all branches of the industry.

All meetings of the Congress are open to the public, and mining men especially are invited to attend and to assist in the discussions.

"The Record of Mine-Safety Work" will be the opening topic on Tuesday, Nov. 14, led by Albert H. Fay, of the United States Bureau of Mines. This will be followed with addresses on "State Mine-Rescue Methods," by H. H. Stock, of the University of Illinois, and "Safety Work as an Investment," by C. W. Goodale, of Butte, Mont. The important discussion of the day will be on the subject "The Responsibilities of the Operator, of the Miner and of the Public."

On Wednesday, in the general meeting, Van H. Manning, director of the United States Bureau of Mines, will speak on "Federal Aid to Mining Efficiency," and Chairman E. N. Hurley, of the Federal Trade Commission, will address the convention on the subject "The Federal Trade Commission and the Mining Industry." The report of the committee on "Relations with the Federal Trade Commission," by Chairman Charles M. Moderwell, will be open for discussion.

On Thursday, which will be devoted to the general topic "Conservation," there will be addresses by W. R. Whitney, chief of laboratory work of the General Electric Co., who will sound a clarion call for Federal aid in research work, and "The New Things in Science," by F. G. Cottrell, of the United States Bureau of Mines. The topic for discussion will be "Waste in the Mining Industry—in Mining, in Distribution, in Use." This will be led by the leading experts in the industry.

Thursday evening has been set apart for the banquet, and thus far two of the speakers have been selected. Carl Scholz, of Chicago, president of the American Mining Congress, will speak on "Coöperation the Basis of Safety, Efficiency and Conservation in the Use of the Nation's Mineral Resources." Col. George Pope, of Hartford, Conn., president of the National Association of Manufacturers, will speak on "Organized Capital and Organized Labor and Their Relation to Efficiency, Conservation, Better Wages, Better Living Conditions, Lawlessness, Strike Disorders and Industrial Freedom."

On Friday the visiting mining men will be taken on an excursion to the Gary steel plant.

There will be several evening sessions, all open to the public, at which industrial moving pictures will be shown. Among the most notable of these will be the films showing the great Mexican oil fields near Tampico, including a fine view of the famous Cerro Azul gusher, and motion pictures covering mining in the arctic regions of Alaska and Siberia.

Recollections of a Manager

About once in every two years, on an average, our directors figured out a possible merger with one or more competing companies that gave promise of working wonders for all concerned; and while the proposed combination was under consideration every official of the company stationed at one of the mines had his hands full. The employees in the auditing department with their statements of outputs, costs and profits were a busy bunch. The operating departments were also busy with their general house cleaning.

No sooner was word sent down the line suggesting the possibility of a merger, than every salaried employee from superintendent to machinist's helper busied himself or herself, as the case might be, with things that made for an improvement in general appearances, more especially the appearances that might be expected to impress strangers.

It would be easy to infer from the foregoing statement that the message sent down the line carried specific instructions to the superintendent to be passed to his foremen and on down to the men, to put the "house in order," but nothing could be farther from the truth.

If the owner of a horse should send word to his stable boy to the effect that he proposed to swap horses with a neighbor at a certain time and at an appointed hour, it is quite certain that the groom, without waiting for more definite instructions, would appear on the scene at the appointed time and place with the horse giddy-pacing, if there was any such pace in him.

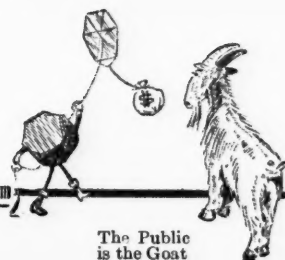
Masters know intuitively that they may depend upon the loyalty of their men, and they receive such loyalty without giving the matter a thought.

After holding several joint meetings, attended by all the directors of the companies involved, an inspection trip would be arranged to cover the holdings of the companies interested; the trip to be taken in a private car belonging to one of the companies (it always happens that at least one of the companies owns a private car). Then word goes down the line to the superintendents to be on the lookout, and things begin to happen.

The first time that it fell to my lot to accompany our directors on such a trip I did so with many misgivings; to undergo inspection at the hands of the officials for several different companies seemed like pretty serious business, and at the last minute I recalled several orders that I had been unable to follow up carefully.

But after the first inspection trip the prospect of a tour with the officials of the several different companies affected me quite differently; truth is, in time I began to look forward to such trips, in which as a matter of fact I found that I resembled some of the directors, the only point of difference being that they were able to order things as they willed. The directors were men of varied interests, and their conversations were most interesting. They discussed everything from fishing to refunding bonds. The only time that the conversation lagged was when one of the coal-mine superintendents boarded the car and expressed a willingness to be questioned about his operation.

It happens that the spurts of the auditing and operating departments are not in vain, even though the directors appear to ignore the fruits of their efforts completely, and in spite of the fact that most of the mergers planned are never consummated. No one realizes this better, after things get back to normal, than those who worked so strenuously while their enthusiasm was at its height.



The Goat

By Rufus T. Strohm
Written expressly for Coal Age.

Many jobbers and small retailers of coal take advantage of conditions that are slightly abnormal to squeeze the consumer, and it is this practice that brings universal condemnation on the heads of coal-mining companies that have tried to restrain rather than accelerate prices—
Editor

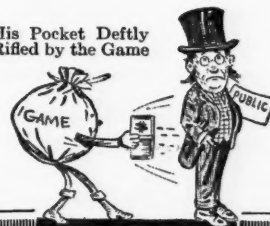
WHEN the miners take to striking
For a shorter working day
And evince a rabid liking
For a stiff advance in pay,
If they conquer in their fighting
It is painful then to note
That the price of coal goes kiting,
And the public is the goat.

Let a bonehead legislature,
Both extravagant and lax,
Boost its budget in the nature
Of a trifling tonnage tax;
Then the dealers all abet it
And the prices swiftly rise,
While the common people get it
Where the Adam's apple lies.

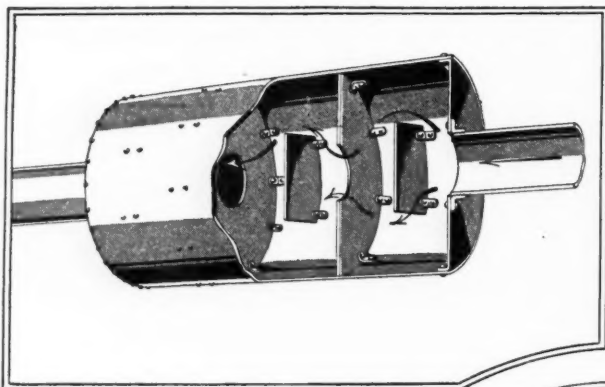
Or, let some one start the rumor
That a labor war's in store,
And at once the poor consumer
Sees the market prices soar
With a speed that puts the rocket
To a guilty blush of shame,
While the public has its pocket
Deftly rifled by the game.

It is meeker far than Moses,
More long-suffering than Job,
Picking thorns from all the roses
That bedeck this ancient globe;
It's a worm without a turning,
Just a microcosmic speck
With unsatiated yearning
To be trampled on the neck:

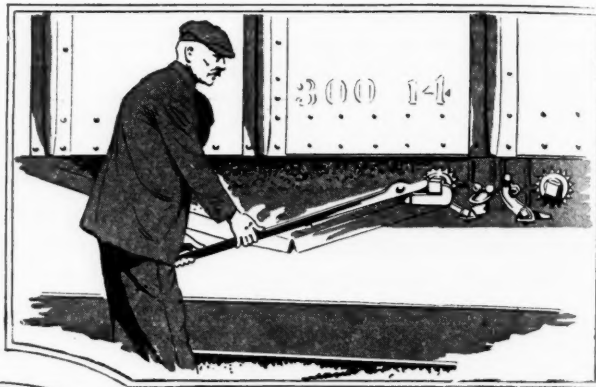
His Pocket Deftly
Rifled by the Game



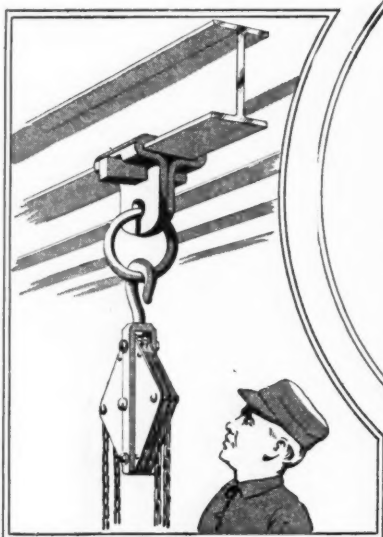
Practical Kinks



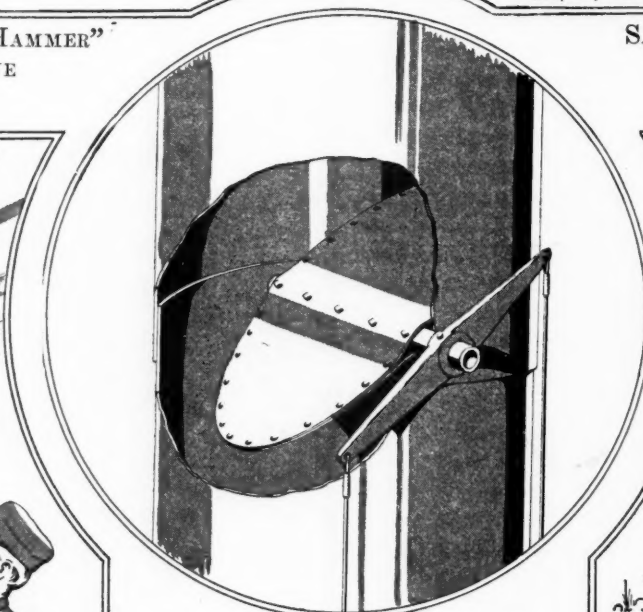
MUFFLER TO STOP "HAMMER"
IN AN AIR LINE



SAFETY CAR WRENCH FOR
BOTTOM-DUMP CAR



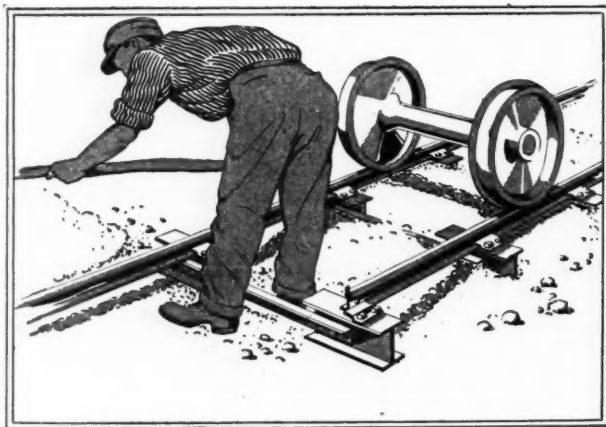
QUICKLY DETACHABLE CLAMP
FOR RAILS OR I-BEAMS



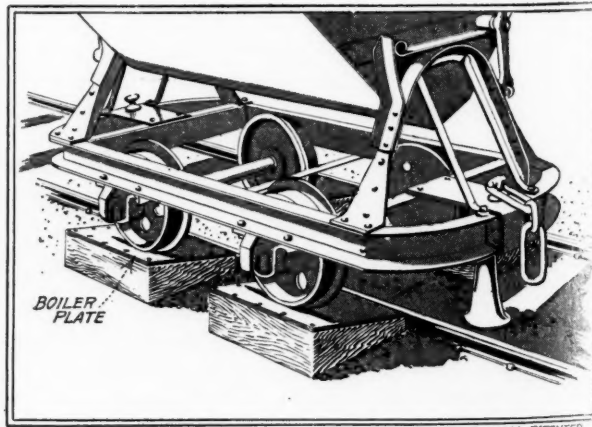
STACK DAMPER MADE WITH TWO
PLATES AND PIPE



BENDING PIPE IN IMPROVED
FIELD STAND



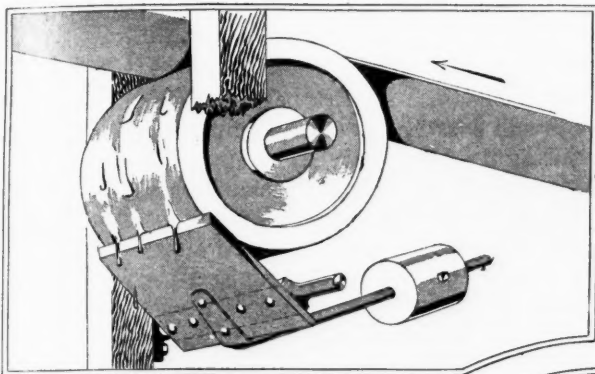
INDUSTRIAL TRACK TIE MADE FROM SCRAP
STRUCTURAL STEEL



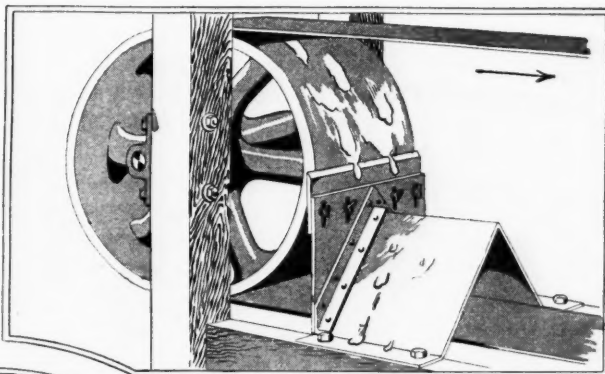
REPLACING HEAVY DERAILED CARS OR MOTORS
WITH JACK AND BLOCKS

ORMAY PROCESS, PATENTED

For Mining Men



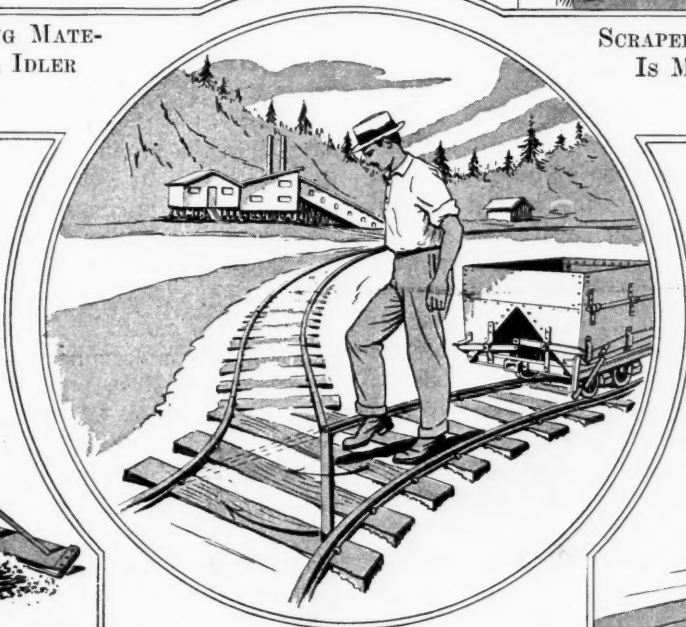
SCRAPER FOR REMOVING MATERIAL FROM CONVEYOR IDLER



SCRAPER FOR CONVEYOR PULLEY IS MOUNTED ON V-FRAME



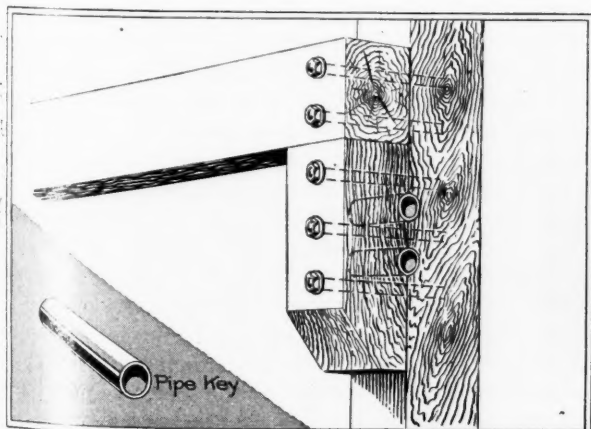
BELT-SHOD SCRAPER TO "SWEEP" STEEL FLOORS



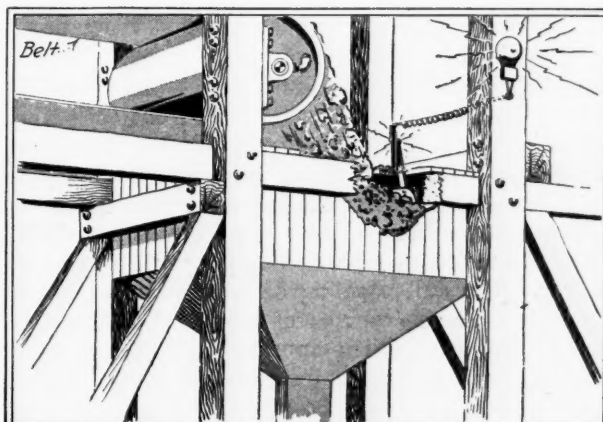
INEXPENSIVE SWITCH ADAPTED TO LIGHT TRAM SERVICE



HOME-MADE SANITARY DRINKING FOUNTAIN



METHOD OF KEYING BRACKET TO POST WITH ROUND HOLE AND PIPE



AN ELECTRIC-BELL ALARM FOR ANNOUNCING A FULL BIN

The Cloudburst on Cabin Creek

BY JOSIAH KEELY*

SYNOPSIS—The author urges that such cloudbursts have happened in almost all valleys and have happened before in Cabin Creek, that the effects of the flood were largely increased by not keeping a clear and cleaned passage for the water and that flood damage should be anticipated in estimating the costs of production.

On Aug. 9, about 6.30 a.m., what seemed to be an ordinary thunder-storm with about the usual lightning and wind, gathered and broke, but instead of a sharp downpour of a few minutes, such as usually accompanies thunder, the clouds seemed to settle down on the hills to stay. It rained a heavy, steady, straight-down shower for nearly 4 hr. with not the slightest check, and 8 in. of rain fell. Over an area of about 100 sq.mi. the precipitation seems to have been quite uniform.

The damage done consisted of the washing out of railroad trestles and bridges, the destruction of buildings and the undermining or covering up of machinery and equipment. The numerous mines in this section suffered little injury other than the drifting up of mine mouths and the damage done to fans. A few dip workings were flooded and small pumps covered.

As is usual in floods of this kind, the destruction starts from the floating debris that has accumulated all over the watershed—old ties, pieces of mine timber, boards, props, boxes and barrels. The first trestle dams up and then breaks, the water coming down in a wall that carries all other trestles and obstructions before it, the destruction growing as in a dust explosion. The flood rushes from one side of the valley to the other, forced this way and that by small side creeks, mountain slides and self-made obstructions.

MAIN DAMAGE DUE TO OBSTRUCTIONS AND RUBBISH

Long before the rain stopped the creek was nearly free of floating wreckage and had cleared a channel for its passage. In fact a few days after the main flood another rain almost as heavy as the first, but not so general, put another stage of water in the valley that would have done almost equal damage had there been floating material and obstructions to aid it.

It is difficult to imagine the destructive power of water when its confines are broken. The soil on the rock ribs of the Cabin Creek Mountains is as thin as the moss on an old log. At every point where the water got between the rock and the soil the hydraulic pressure burst this thin covering, either making a crater on the mountain side or, if the rock was smooth, stripping it bare to the creek below. The dull booming of these ruptures could be heard above the general roar of the water, and to the eye of the observer it often appeared as an explosion, throwing trees and earth and water out of the mountain side.

If the whole slide came down, it was sufficient, in many cases, to partially dam the main valley, or to throw the main current to the other side. If the soil was thinnest

where the tree stood, roots and all were torn up and the tree shot into the air as if a hand from the clouds had reached down and jerked it up. Perhaps as many buildings were pushed into the creek by slides as were caught in the path of the flood.

One old tree, stripped of its limbs, shot down the mountain endwise, passing clear through a house without injuring its occupants. Many other odd things occurred: A two-ton iron safe was washed from the Cherokee store to Alum Lick, a distance of a mile. Steel gondolas were taken off their trucks and went by like boats, until they filled with water. As soon as this happened they were rolled and turned on end by the flood or buried in the sand. Hundreds of yards of railroad trackage were never recovered.

Three large transformers were washed out of the Kayford substation. One was found on top of the debris below, and the others were given up for lost. In excavating later for a new foundation a wire was found leading down into the ground to the other transformers, one of which was 11 ft. below the surface. The water had gouged out an immense hole, and a slide had pushed the transformers into it and they had been covered up. But most of the heavy articles washed away have never been found. The great steel girder of the main line bridge at the mouth of Cabin Creek dropped down when one pier was undermined and has not yet been located.

It is supposed that all the heavy stuff dropped into washouts and was buried. For instance, hundreds of kegs of spikes and nails were lost and not a trace of them has ever been seen. One of the Chesapeake & Ohio Ry.'s heavy-type engines was on its way to Kayford with 30 steel cars. It met the flood and was turned crosswise and buried in the sand. Details of the destruction might be multiplied, but they are better forgotten. They are only enumerated as an introduction to something that it is hoped will prove more constructive.

PROBABILITIES THAT LIKE FLOODS WILL OCCUR

Many mining sections of West Virginia and Kentucky are today built up between the mountains, and more or less attention is given to protection from floods in the creek or river that is usually nearby. As a rule, an 8-in. rainfall occurring within 4 hr. would bring about the same disaster as has just been described. A careful examination of the ancient river drift heaps in any stream basin shows that in nearly every locality similar catastrophes have happened in centuries past.

Now that our attention is called to it, we see plainly that the same thing happened on a grander scale in this same basin probably not later than two or three hundred years ago. At the mouth of every ravine is a mound completely covered with soil and trees, but now that it is exposed by the recent sluicing it is found to consist of the same material as the new mounds thrown up by the recent waters. Nor are these the accumulations of centuries. Slight spring showers year by year do not build in this way. They may cut down, but they do not heap up debris. Our next great rush of water will sluice the sides of our late gravel heaps and form new ones, but probably not build onto those formed long ago.

*General manager, Cabin Creek Consolidated Coal Co., Kayford, W. Va.

As to the possibility of such excessive rainfall in other times and in other districts, there seems to be no guaranty of exemption. Of course there is a limit to air saturation, and no one believes that a cloud of a 100 sq. mi. could stand still and drop 8 in. of water onto 100 sq. mi. of the earth below. The conditions above, which combine to cause such excessive precipitation, are rare, and what actually takes place is only a surmise; but the limits of the present flood district are definite enough to justify us in supposing that a mighty sea of moisture-laden air must have been driven for miles, either in a whirling motion or straight onto currents of low temperature, in such a way as to maintain the precipitation in this limited area for four long hours.

To erect our buildings so as to meet such an unusual condition would be almost impossible and certainly prohibitively expensive. The lessons to be learned are almost negligible, but some precautions can be taken. The steel towers of the Virginia Power Co., set in concrete on the hillsides, or deeply anchored in the creek-bed, were little damaged. Only two crumpled, while all the wooden telephone poles and all the low-power poles on the creek are now somewhere near the Gulf of Mexico.

COURSE OF A FLOOD IS QUITE INDETERMINABLE

We may also realize that the railroad trestles need not be built so that they will trap the water. All the creek drift and bits of wood and timber around the plants may be burned up or piled in secure places. Buildings may be placed so as to give a straighter line to the valley. One small wing to a 10-in. concrete retaining wall saved my house at Kayford; a small sycamore tree saved the church at Acme with a crowd of refugees; but it is still rather disconcerting to contemplate that should there be a hundred such floods, no two of them would attack the same points, so variable are the accompanying circumstances that determine the course of the current.

However, there is a law of probability that is worth considering. The famous old German liar, Baron Munchausen I believe it is, tells of a flock of ducks floating on a lake and watched by a hunter with but one bullet. He calculated by the law of probability just when they would so shift their positions as to get in line of his bullet, and bagged them all.

Our problem is not quite so difficult of solution as this. For instance, excessive rainfalls are not so rare as to be entirely ignored. They happen almost as frequently as disastrous fires. Any mine openings that are within ten or fifteen feet of what is known as the high-water mark, are perhaps in as great danger as were the plants and equipment of Cabin Creek. This is recognized by some companies, and plans are being discussed for flood doors or shaft openings. Perhaps the next best thing to foresight is the determination "to meet the situation," a phrase expression of one of our foremost mining men in West Virginia; and, by the way, a key to his success.

FLOOD REPAIR RAPID RATHER THAN METHODICAL

Many questions have been asked since Aug. 9, as to the actual damage done to the companies operating on Cabin Creek and to the Chesapeake & Ohio Ry. It has possibly been unbusinesslike not to take careful account of these losses, but it may be doubted if the time has ever been taken to ascertain how severe they have been. The situation was like the familiar predicament

of the farmer (under what circumstances I never have inquired) who caught the patriarch of his herds by the tail—it was not the proper time to let go.

The Chesapeake & Ohio Ry. rushed in its best men from all divisions with pile-drivers, derricks, steam shovels and hundreds of carloads of material. Pack trains were made of the mine mules and kept plying between the base of operations and the head of the creek. The tunnel between Cabin Creek and Coal River, 22 ft. high and nearly a mile long, was found to be covered at both ends and filled with water. An enterprising miner constructed a boat and for several weeks kept a ferry for travelers and supplies through the tunnel till the steam shovel arrived to release the impounded water. Miners who had been working for \$3 to \$5 per day in the mines stayed on the job, living in schoolhouses, churches, blacksmith shops and box-cars, and worked for \$2 per day building track to meet the trainmen.

Ties and rails were laid across sand bars and through the creek across log cribs. In fact every temporary plan was adopted to get trains through with steam shovels and ballast. Mule teams drove down the creek picking their way through the wreckage, followed by crews that made a road out of the wagon tracks. Wheelbarrows, wagons, dumpcarts, scrapers, plows and tools were rushed in, and in a few days the creek was smoking from one end to the other with fires from the burning debris. The rough-board houses are being replaced by nicely painted weather-boarded structures, with more attention to location and spacing. In 60 days practically every mine has again been put in operation. There are three tipples not yet finished, but they are for small mines.

WEST VIRGINIA MINING PUBLIC IS GENEROUS

The aid and coöperation of other coal companies and the allied business interests speaks well for the future solidarity of the coal industry. Liberal donations were sent in to the miners from miners and officials of companies in the other end of the state. Business firms offered ready material and gave precedence to many of our orders. In spite of the great need of miners in other camps, only one company allowed its agents to try to take advantage of what seemed to many miners an indefinite shut down, by allowing their agents to come in with offers of transportation and furnished homes.

The cloudburst is now past history, but most history is more accurate upon mature research and a comparing of reports. As an incident in the mining history of the state it has demonstrated more clearly than ever that the money invested in coal operations must be further protected in the cost accounting. Profit and Loss is too general a heading for such expenses as Cabin Creek has just passed through. It calls to mind Mr. Ord's contention that every company should charge off each month or year a certain per centum or per tonnage charge to a depletion account, to take care of such losses as are not recoverable by insurance. Such floods are a legitimate risk against which to provide in future cost accounting.



England Now Has About 120 Byproduct Coke Plants in operation, comprising about 8,000 ovens, each carbonizing a coal charge of from 8 to 10 tons in from 30 to 36 hr., or approximately five charges per week. As the operation of the plants is continuous, the potential yield of metallurgical coke per oven per year, allowing liberally for all contingencies and for occasional repairs, may be taken at from 1,200 to 1,500 tons, so that the aggregate output is approximately 10,000,000 tons.

Prevention of Mine Accidents*

By F. W. SPERR†

SYNOPSIS—What is loosely termed culpable carelessness may be divided into several heads: Overattention to the work in hand, miscalculation or misjudgment, a desire to save work or time, a wish to show dexterity and a longing for the exhilaration of danger. There are few cases where the victim deliberately neglects precautions without having some reason, sufficient or inadequate, and the first two faults mentioned are not culpable at all.

In the consideration of accidents, their causes and their prevention, two essentially different elements enter into the account—the material element and the human or psychological element. The first is largely subject to the control of the engineer according to well-known laws. He knows, if machines or cables break, how to make them stronger, and careful inspection is quite efficient in preventing their use until worn out. Guards are put up to prevent men from becoming entangled in moving parts. Fences, gates and covers are placed to prevent men from falling into holes and shafts. If a mining method is, or becomes, unsafe, a safer and better one is evolved.

The human element, on the other hand, is less easily controlled, is the more complex and less perfectly understood. A large percentage of all accidents is attributed to the carelessness of the victims themselves. But, what is carelessness? And why are men careless? Are they really and absolutely careless in the sense of being neglectful of danger? No, not that, but they are liable to forget the presence of danger while thinking of something else. Apathy may, however, be a quality which all men possess, only in different degree; but a man who is wilfully careless of life and limb is a subject for public care, rather than for any kind of employment, and the use of alcoholic drink puts him in the same class.

CARELESSNESS IS USUALLY BLAMED

Many of the accidents that are commonly attributed to carelessness are due to the momentary distraction of the attention, or to the absorption of the whole attention by something else than the presence of danger. We may well say that such things should not be, but the fact is that they are. Accidents come and we have to meet them. And what can we do to prevent them? We can educate, discipline, give the best possible supervision, etc., in addition to placing all possible material safeguards, and thereby, no doubt, avoid many accidents, but the fact remains that such accidents take their proportionate toll from the best educated and from those whose office it is to discipline and supervise.

Mining engineers of all degrees of experience and standing, mine superintendents and mine bosses, all come in for their share of so-called careless accidents. But we believe that even such accidents to such men can be reduced in number if we can learn more of the real

truth of why they occur. Let us consider a few cases only: The general consulting engineer of a large corporation was inspecting a shaft which required his attention. Standing on the landing of a lower level, he leaned forward into the shaft to make an upward observation. The skip was being loaded below in the same compartment of the shaft. He had every opportunity to observe the position of the skip and note its starting upward by the rope hanging in front of him. He was not inattentive to what he was about, but he was overattentive to the work in hand—and the skip caught him.

A mining superintendent of lifelong experience noted something in the skipway that required adjusting and which would take but a moment of his time in passing to make right. He proceeded to remedy the defect—and the skip came along and took him for eternity. Probably the set purpose to accomplish the act initiated prevented his getting out of the way of the danger.

AN EXAMPLE OF SET PURPOSE

The manner in which the influence of the set purpose to accomplish an initiated action may become all-absorbing and complete-controlling, is well illustrated by the experience of one of a surveying party. He set out to pick up a pin that was stuck in the middle of a railroad track. A cut of cars was coming down the grade toward him. At first the necessity for making haste did not appear to him, but it soon grew upon his consciousness, and he ran at topmost speed, unmindful of the calls of his fellows to get off the track, losing all sense of danger, his sole thought being to get that pin, which he did and jumped to one side with scarcely six inches to spare between himself and the passing car. Had he been killed who would ever have known why he acted as he did?

A mine surveyor's assistant, going in advance of the party, carefully picked his way around a hole in the passageway. A short distance beyond he was stopped by the call of his chief and asked to return; in returning he walked into the hole—apparently having forgotten all about its being there. In reality, it was the new train of thought aroused by the summons that obliterated all thought of the danger in his path; and, besides, there was no doubt an overanxious desire to make good in the job that he valued as an opportunity to enter upon a desirable line of work. Many accidents are caused by an overzealousness on the part of helpers.

Many apparently careless acts are rather due to miscalculation or misjudgment. A timberman going out to the shaft, through a drift, lost his light and had used his last match. Instead of sitting down and waiting for some one to come along he started to grope his way to the shaft, carefully reaching ahead with the advanced foot to avoid stepping into it. Presently a light flashed around a pillar, and he found himself with one foot close to the edge of the shaft and with the other reaching far out into the opening. He recovered himself. But could he have done so if the light had not appeared? If he had fallen who would have known why?

*Article read before the Mining Section of the National Safety Council at Detroit, Mich., Oct. 19, 1916.

†Professor of civil and mining engineering, Michigan College of Mines, Houghton, Mich.

An accident which was due to miscalculation, and was luckily not fatal, was that of a mining engineer who was making an examination of a mine in Mexico. He lost his light when alone in a drift and some distance from a shaft. His last match was gone. The shaft was of the Spanish régime, about 75 ft. in diameter, walled with masonry to a depth of about 1,000 ft., with no framework, but absolutely clear of everything, except some guide ropes which had been placed during the English régime for little hoists around the immense opening at the surface. Looking up from the bottom was almost like looking up from the bottom of the Grand Cañon. The man started for the shaft with the same assurance as he would feel in going to the edge of the cañon through a defile. But, before he saw the light, he fell headlong into a shaft—by chance against one of the guide ropes, which he grasped, sliding 200 ft. down to a cage landing, and shouting for help.

Men do many hazardous things which are forbidden by the rules of the mine, not from carelessness, but for a reason which outweighs the element of danger in their estimation. They ride the skips, because of convenience; ride the bail, because they feel safer there than in the bottom of the skip; jump on the cage after the signal to hoist has been given, because they are in a hurry to get to the surface; fail to make their working places safe, because they persuade themselves that the extra effort required is unnecessary; and so we might go on with an almost endless list of violations of rules for reasons which seem sufficient but are not. Such violations can be minimized, but never wholly eliminated by education and discipline.

SOME ACCIDENTS ARE DUE TO NEGLIGENCE

There is another class of violations of rules which is due altogether to negligence: Leaving fences down, gates open, covers off, and failure in general to apply the preventive means which are provided. This class requires special treatment, supplementary to the education and discipline to be prescribed for the first class. A system of charges for damages on account of the improper use of material things about the premises seems to be most effective in producing the desired results.

Then there are those who take chances for the very pleasure of the excitement which the action affords, and the greatest sinners in this regard are the athletes whose coördination of action between eye and muscle is most perfect. They can place the hand and foot with precision on objects passing at the rate of ten to fifteen miles per hour—the greater the speed the greater the pleasure of the experience. The awkward, clumsy fellow takes no such chances, because they give him no pleasure. And yet the athletic quality is highly desirable and often saves life, but, like many other good qualities, it needs to be controlled.

It is no longer the fashion to find consolation in the reflection that we shall always have accidents, but all are alive to the questions of the best means to prevent accidents and to the importance of rescue, first aid, and the best possible medical treatment for those accidents that happen in spite of us, and there is reason to believe that greater results are yet to be attained through the systematic study of the human element involved in the problem. It is not enough to say men are careless, but it is necessary to go back of that and find out why, if possible, in order to apply the proper correctives.

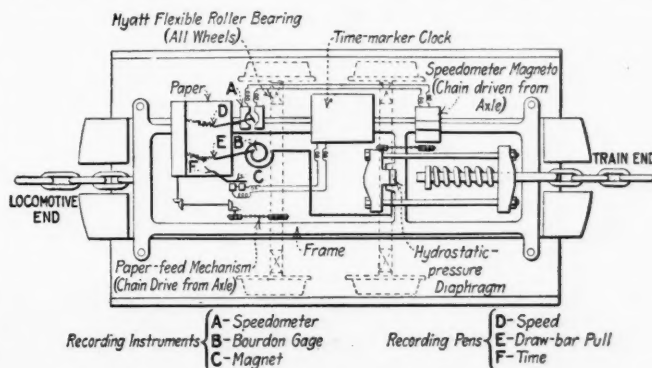
A Coal Mine Dynamometer Car

Two questions the modern engineer constantly seeks to answer—why and how much. Sir Isaac Newton was probably well aware that apples, unsupported, would fall to the ground, long before he began to seriously consider the “why” and “how much” of the phenomenon he beheld while loafing in the orchard. The significant fact remains that before he dismissed the topic from his mind he had determined, not that apples fall, but why they fall and how fast they fall.

The most ignorant miner's laborer in the country knows that it takes power to move mine cars. It remains for the engineer to determine exactly where, why and in what amount this power is expended. The next problem is, of course, by what means and to what extent may car or train resistance be lessened and tractive effort be conserved.

The first engineers to seriously consider train resistance and the possibilities of its reduction were naturally railroad men. The railroad dynamometer car has long been an established fact and a piece of apparatus the utility of which has been clearly recognized. For years, however, after the perfection of this piece of railroad equipment, the coal-producing industry has been operating innumerable miniature railroads without any serious, that is, any scientific, consideration of track resistance, journal friction, curve resistance, grade resistance and the like.

The reason for this is obvious. The business of a mine management is to produce coal. Cars, track, mules, locomotives are merely means to an end. The manager's, superintendent's, or boss' minds were so engrossed with



OUTLINE AND DIAGRAM OF THE CAR

the idea of production that there was scant room left for even a casual consideration of such a trivial subject as friction. Of course, every mine official knew well that journal friction and track resistance existed. They knew that bigger trips could be hauled by a certain locomotive over a carefully maintained well ballasted track than over a poorly kept track; that adequate journal lubrication had a similar result and made the cars last longer. But when it came to the “how much” of the problem, this was and in most cases still is, an unknown quantity.

To determine accurately the “how much” of train resistance in coal mines the Hyatt Roller Bearing Co., of Newark, N. J., recently constructed a dynamometer mine car. This is shown, somewhat diagrammatically, in the accompanying illustration. In its design advantage was taken of the experience of railroads in building and using cars of a similar nature.

A dynamometer mine car presented several difficulties not encountered on railroads. Chief among these are the multiplicity of track gages employed in different mines and the varying elevation of the drawbar, or coupler. The car was accordingly provided with several sets of interchangeable axles, so that it will operate on any track between 30 and 48 in. in gage. To accommodate the car to various heights of drawbar the mechanism was mounted on a frame within the car, so that it can be raised or lowered at will to be in a straight line between the bumper of the locomotive and the hitching of the first car of the trip.

In the design of this car six requirements were kept in mind. These were: (1) All readings must be made graphically, thus eliminating the personal element and liability of error; (2) corrections were to be eliminated and calculations reduced to a minimum; (3) train resistance or drawbar pull was to be measured directly; (4) train speed was to be continuously indicated; (5) the time required to traverse a certain section of track was to be determined, as well as (6) the corresponding position of the train and the grade.

To accomplish these ends the following instruments were employed: (1) A hydrostatic pressure diaphragm, connected by brass tubing to a Bourden-tube pressure gage carrying a recording pen. The diaphragm and all tubing was completely filled with oil and after all air had been

expelled permanently sealed. (2) An electric speedometer consisting of a magneto, chain-driven from one of the axles, and a voltmeter calibrated to register miles per hour directly. (3) A time-marker clock which makes a single mark on the record paper every 5 sec. and a double mark every minute. (4) A drum, chain-driven from one axle, which draws the record paper from a roll across a table and under the various recording pens.

By means of the foregoing instruments three readings, which are always in synchronism with each other, are made. These are the drawbar pull, the speed, and the time. The profile of the road over which a test run is made may be added by hand.

The speed of the record paper is such that the paper moves across the recording table a distance of 33 in. for each mile of travel. Heavy cross-rulings represent 0.1 mile, while light rulings represent 0.01 mile.

It is the intention of the owners of this car to thoroughly study by its aid not only the effect of various bearings, but the relation between drawbar pull and speed, the effect of car weight, different track gages, curves, weights of rails, various wheel diameters, length of trips, the effect of difference between empty and loaded trains, the effect of weather conditions, etc. In short, it is the intention to determine thoroughly and beyond doubt the "why" and "how much" of mine train resistance.

Explosion at Marvel, Ala.

BY H. S. GEISMER*

SYNOPSIS—Explosion killed every man in the mine with exception of one, who was working well to the outside. Earthquakes suggested as having some connection with the disaster.

On Sunday, Oct. 22, 1916, at about 2:45 p.m., a local gas explosion occurred in the Roden Coal Co.'s mine at

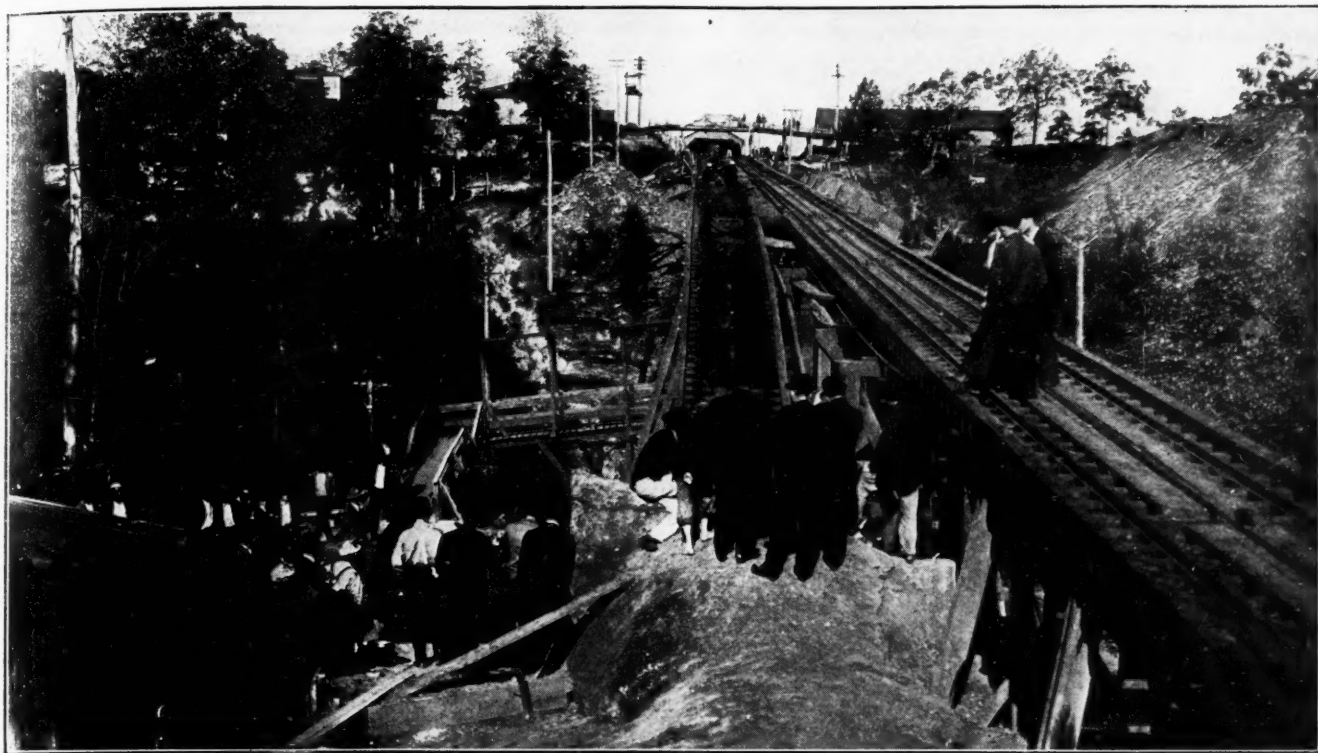
*Birmingham, Ala.

Marvel, Ala., instantly killing seventeen men. Another man lost his life while engaged in rescue work.

The list of the dead is as follows: White—W. F. Cochran, master mechanic, married; W. B. Freeman, chief electrician, single; Grover Finley, boss driver, married; Bruce Finley, single; M. A. Lowrey, married; D. N. Ogle-tree, bratticeman, single; Moses Harwell, machinist, married; George Liddell, pumper, single; George Jones, of Garnsey, overcome while engaged in rescue work; Dewey



ENTRANCE TO MINE A FEW MINUTES AFTER THE EXPLOSION



TRIP COMING FROM LOWER COAL BED WITH DEAD BODIES

McDonald and David Purvis. Colored—John Stoke, Roscoe Robinson, Early Collins, John Bell, S. Wells, Kinzel Martin and Lindsey Martin.

Only one man of those in the mine at the time of the explosion escaped. He was a pumper in one of the upper headings above the point where the explosion was felt. All the men killed had gone into the mine early in the morning to install a new electric feeder cable, and at the time of the explosion their work had been just about completed. This is evidenced by the fact that ten of the men were out on the main slope by the side of the man trip preparatory to being hoisted to the top.

THE MINE WAS NOT CONSIDERED GASSY

The coal seams at Marvel were not considered gassy, in fact on an average of about four days a week the fire-bosses give a clear board. Two seams of coal have been worked at Marvel, but at the present time only the lower one is being operated. The explosion did not come to the surface through the haulageway of the lower seam, but reached the surface through the haulageway in the upper seam. It did great damage to the entrance of the mine at this upper slope and completely wrecked the piping system installed for humidifying the mine air. This humidifying system is only used during the winter months when mine air is usually dry.

The men were at work in the twelfth left heading and the explosion was most severe in that and in the ninth left. Open lights were being used, as is the case at all the Marvel mines.

The mine is ventilated by two large centrifugal fans. These fans ran continuously all day Sunday and were not damaged by the explosion.

On Oct. 18 the Birmingham district felt a distinct earthquake shock, and on Oct. 21 slight tremors were again reported. Many people, therefore, are speculating as to the possibility of there being some connection between this gas explosion and the earthquake. Investiga-

tion shows that from 11 a.m., Oct. 18, until 6 a.m., Oct. 19 the barometric pressure was below 29 in., or 29.77 in. reduced to sea level base. The earthquake was felt at 4:03 p.m. on Oct. 18. At 5:30 p.m. on that day the barometer recorded in Birmingham 28.83 in., which is equivalent to 29.60 in. at sea level. This is the lowest record of the year, in fact for several years. However, at the time of the explosion on Oct. 22 the barometer recorded 29.41 in., or 30.21 in. at sea-level equivalent. This would indicate that there could be no connection between the explosion and the low barometric pressure of the previous week.

The Marvel mine gives employment to about 300 men, and it will be several weeks before work can be resumed.



RAILROAD STATION AT MARVEL

Immediately after the explosion preparation was made to establish a ventilating current in the mine; the first body was recovered at 10 p.m. Sunday night and the last two at 10 a.m. Monday morning.

The United States Bureau of Mines rescue car was sent to the scene of the explosion, but by the time it arrived helmets were no longer necessary.

The Roden Coal Co. is one of the most progressive companies in the South, and the Marvel mine is equipped throughout with equipment of the most modern type.

The Labor Situation

General Labor Situation

In the growing scarcity of coal the miner is showing little or no interest. Strikes for the closed shop and for early payment on pay days vie with unauthorized holidays and short working days to promote a coal shortage. A decrease in anthracite tonnage since April 1, averaging 340,000 tons per month, exhibits quite clearly that little attempt is being made to maintain last year's tonnage. The falling off for the year will be about 4,000,000 tons if the present rate is maintained—4½ per cent. of last year's production.

The anthracite companies are trying to prevent a coal famine. The Lehigh Coal and Navigation Co. is endeavoring to make its men work full time on Saturday, as their contract indeed provides. Attention is called to the article "Celebrating Mitchell Day" in this issue. It mentions the strike at Nesquehoning for a closed shop and that at No. 9 colliery at Tamaqua, the first laying idle 1,500 men and the second 400; it also speaks of the stubborn Temple Coal Co. button strike, but it does not refer to the strike at the North Franklin colliery of the Philadelphia & Reading Coal and Iron Co., which occurred on the same day as the Tamaqua strike, Oct. 27, and rendered 800 mine workers idle. The men had no grievance with the company. They merely struck to give the other mine workers the "new freedom," of which we hear so much. A similar strike had laid idle the mines of the Darkwater Coal Co. near St. Clair.

The United Mine Workers of America in Pennsylvania are planning to have a legislative committee to represent them at the next legislature. It will be composed of one member from each of three anthracite and two bituminous districts.

These Strikes Also Violations of Agreement

A strike at the mine of the Clearview Coal Co. in the northern anthracite field has been settled. The mine is not large, employing only about 100 men. David Fowler, district board member for that subdistrict, declares that the strike occurred because officials of the company required the men to load six cars in half the time formerly provided. After the close of last month the union was hoping that the strike at the Greenwood colliery of the Delaware & Hudson Co. at Taylor would come to a happy conclusion for the union men. They hoped to start work again on the first of the present month, thus closing a four-week suspension. The men have claimed that a scale made for higher coal has been unjustly extended to cover coal which is thinner. It was anticipated at last advices that a new and higher scale would soon be granted and would be submitted to the miners for their ratification.

It will be remembered that two locals in the Pottsville region were recently suspended for paying benefits to men illegally on strike despite warnings not to do so. The union seized the books of these locals, and a case was prepared by the latter against the district union and it is now on trial at the Pottsville court. However a stay has been granted, as the attorneys for both sides intimated to the court that a conference would be held and that an amicable solution is now possible.

Troubles in the Allegheny River District

In the bituminous regions of Pennsylvania the matter of leading interest is the arrest of W. Earle Iseman, part owner and general manager of the Cornell Coal Co. mine at Creighton. Iseman is charged with felonious assault and battery. The affair was described in last week's "Labor Situation," not very lucidly however, for there were three contradictory accounts of the affair. Even now the true details do not show up clearly. In fact the "United Mine Workers' Journal" most unreasonably declares that Iseman purposed to assassinate John P. White, who was addressing the meeting.

The charge against Iseman was preferred by Alexander Kirkpatrick, an organizer of the United Mine Workers. He alleges that Iseman shot at him with a revolver. Other informations were made by Warren Pippin, another organizer. Iseman has a commission placing him on the coal-and-iron police which was issued to him on Oct. 2 by Governor Martin G. Brumbaugh. Sheriff Richards had previously appointed Iseman as a deputy sheriff, but withdrew the badge because,

it is said, Iseman had been indiscreet in its use. The deposed deputy then applied for a commission on the other body.

When, on Oct. 24, Iseman appeared before Justice Thomas E. Conway at Hites Station, he waived a hearing and gave bail for \$1,000. The miner who was shot in the neck and the deputy whose ribs were staved in and the many who had injuries apparently less serious are recovering rapidly.

This disorder, concerning which so many versions have appeared, occurred in a section of western Pennsylvania where the mine operators are still making a struggle against the recognition of the union. The same justice, Thomas E. Conway, of Creighton, fined an operator, William F. McFetridge, Sr., for felonious assault on the same day as he held Iseman for that offense. In McFetridge's case the fine was only \$1 and costs, and the charge was disorderly conduct, McFetridge having too strenuously objected to Warren Pippin's photographing his office. Pippin, it will be recalled, made an information in the Creighton mine case.

Rochester & Pittsburgh Coal Strike Ended

The central Pennsylvania troubles are not by any means over. The Rochester & Pittsburgh Coal and Iron Co. men have consented, it is true, to go back to work at all points except at Florence. But the compliance, which resulted in their going back to work on Oct. 25, was grudgingly accorded. Some of the men who have property were afraid of the threat made by the company that it would bring a suit under the Sherman anti-trust law and on Oct. 25 several of them went to the county seat to put the ownership of their houses and lands in their wives' names. John W. Reed, of Brookville, a former judge of Jefferson County, and A. L. Cole, of Du Bois, have been retained by the company to assist in the prosecution of the suit.

The miners declare that if at the end of three weeks a decision is not reached favorable to them they will try to call a special convention, hoping that this body when convened will finance the mine workers of the R. & P. C. & I. Co., in the breaking of their contract.

Evidently the moral argument has not triumphed in this strike. The threatened suit of the company and the failure of the union to pay benefits and not moral suasion are the two salient forces which have temporarily, at least, broken the strike. Patrick Gilday, chief of the State Bureau of Mediation, is at Punxsutawney endeavoring to settle the dispute. He was formerly the president of the central Pennsylvania district union and was later appointed one of the federal mediators in the Kanawha strike. While a strong advocate of labor, he is disposed to be fair in his judgments.

Many Somerset and Broadtop Miners Are Out

The Somerset County trouble still continues little changed as far as the Holsopple district is concerned. The union is trying hard to draw away J. Blair Kennerly's men. The Knickerbocker Smokeless Coal Co.'s mines and those of the Baker-Whiteley Coal Co. at Hooversville are gaining in tonnage. This is also true of the operation of the Stauffer-Guemahoning Coal Co. at Listie. The Atlantic Coal Co. at the latter place is working under union jurisdiction.

In the Berlin and Meyersdale sections the United Mine Workers are active, and several small mine operators have strikes, including C. J. Rowe and Brothers, S. K. Bauman and the Harding Coal Co. Two large mines of the Consolidation Coal Co., one in the Jenner field and one near Meyersdale are working with less than half of the normal force, as some of the men are demanding union conditions.

For some time there has been a strike at Vintondale colliery of the Vinton Coal Co. on the Cambria-Indiana County line. On Oct. 20, Sheriff W. E. Mulhollen, of the latter county, evicted a number of families from the company houses.

In the East Broadtop region of central Pennsylvania about 1,500 miners have been on strike to compel the companies to let them shoot coal from the solid. The company points out that such shooting is contrary to the law. The state mine inspectors are trying to adjust the differences and to induce the miners to consent to mine the coal as the law and safe and economical mining require, but without much success. Several miners have left the district.

A general advance in wages was made last week at the Somerset County mines along the Baltimore & Ohio R.R.

It amounts to 7c. per gross ton on pick mining and 25c. per day on day labor. The increase is said to be due to the attempt being made to unionize the mines. But this increase of wage has also been made at the mines of the Consolidation Coal Co. at Cumberland, Md. Word also comes from the mines of the same company in West Virginia to the effect that wages will be raised 10 per cent., the schedule affecting some 10,000 mine workers. These mines, it will be remembered, have recently fallen under the control of John D. Rockefeller.

In West Virginia the dispute at the Rush Run mines as to whether the Loup Creek price of 43c. per ton or the New River price of 53c. should apply to the Rush Run mines is to be submitted to arbitration, a verbal agreement having been reached with Charles Batley representing the international organization.

In the same state Thomas Cairnes, former president, C. C. Griffith, former vice-president, both of Charleston, and Frank Keany, of Cabin Creek, have all been nominated for president of district No. 17. Ben Morris, of Marmet, and Everett Stover, of Dorothy, are candidates for secretary-treasurer. The referendum, which will determine who is to serve, will be held in December.

In Illinois, Duncan McDonald, the secretary of the United Mine Workers in that district, has sent out a call for a special convention to be held Nov. 9 at Peoria where charges will be heard against Frank Farrington, president of the Illinois organization, who is alleged to have used his office in the interest of the candidacy of Frank L. Smith, Republican nominee for Governor.

The convention was authorized by a referendum vote of 12,915 to 11,592. Farrington does not deny working for Smith, but says he aided him in a personal capacity and not as a president of the union. He further states that the \$1,000 he received was distributed among various workers—miners who needed the assistance. Farrington has been regarded as a man above such paltry corruption, and it is to be hoped he will be able to vindicate himself. He numbers among his friends the most scrupulous and honorable people in the industry.

All Southwest Is Settled Except Oklahoma

In Kansas only the strip-pit question remains to be settled. Those coal miners and those members of the Southwestern Coal Operators' Association who have remained in session since the Oklahoma operators withdrew have now arranged all other points in dispute and an agreement will soon be completed.

In Oklahoma the district executive board of the United Mine Workers of America, after trying in vain for several days to make the representatives of the Oklahoma Coal Operators Association accede to their demands in the formation of the biennial wage contract, submitted to the general convention of miners in session at McAlester an order calling a strike of all the coal miners in Oklahoma, effective Nov. 1. The strike was promptly ordered and obeyed.

It is estimated that between 9,000 and 10,000 coal miners in Oklahoma are affected by the strike order, approximately 35 per cent. of the coal companies in Oklahoma being affiliated with the Oklahoma Coal Operators Association, with which agreement could not be reached.

The points in dispute involved sections four and six of the proposed agreement forming the biennial wage contract. These sections deal with the employment and discharge of men and the collection of fines for violations of contracts. These are the same points over which the conference between the miners and the Southwestern Coal Operators Association, held for several weeks at Kansas City, disagreed, and which were finally settled satisfactorily to the miners. The same points also caused disagreement in the conferences held at Fort Worth, involving all coal operators and miners in Texas. The Texas operators also conceded these points to the miners. With these two cases as a precedent, the Oklahoma miners announce that they are determined to win on these points.

The strike order does not have to be placed before the miners in a referendum election, as the general convention has full power to act. The operators are not at all disposed to give way and they insist that the rank and file are opposed to the action of their leaders and in favor of a compromise.

As just stated, Texas has now made an agreement. Despite the large and almost unbelievable rate per ton paid for mining in the past in that state, and despite the competition of oil and gas, Texas operators have granted the miners a 5 per cent. increase in wage and improved working conditions. A conference has been in session at Fort Worth at intervals for a period of more than two months, and for a while it appeared that a state-wide strike was inevitable. The biennial wage contract has not only been written but formally ratified by the conference.

Celebrating Mitchell Day

About the only portions of the agreement of May 5, 1916, between the Anthracite Mine Workers' organization and the anthracite operators, which the parties of the first part consider worthy of observance are those which provide for increases in wages, the shorter working day and the maintenance of the prices of supplies. No obligations seem to rest upon them to comply with the portions of the agreement which call for operating the mines 8 hr. a day, six days in the week, excepting legal holidays, and for general cooperation with the operators in securing efficient working of the properties.

The urgent need for coal, both anthracite and bituminous, at the present time is widespread and so acute in some sections that a species of panic exists lest consumers may be found entirely without fuel with which to withstand the winter's cold. The operators have been endeavoring to their utmost to relieve the situation, but have been greatly hampered, not only by the serious shortage of labor in the field, but by the indifference of the miners to the exigencies of the situation.

One of the most flagrant instances of this and of the violation of the contract with the operators in the observance of "Mitchell Day" on Monday, Oct. 30. This "holiday" happened this year to fall on Sunday, but by order of the union officials the mine workers were "officially notified to observe Monday, Oct. 30, 1916, as a holiday by remaining away from work." By this action practically all the collieries in the region were shut down and the public was deprived of from 250,000 to 300,000 tons of sorely needed coal. The loss to the miners in wages was in the neighborhood of \$500,000.

Nor is this all. Wednesday, Nov. 1, was All Saints' Day, and most of the collieries were idle in observance of that festival. Next week election day will mean another shut-down, and still another suspension will be caused by the celebration of the Greek Catholic All Saints' Day, which is fixed by the Greek calendar.

In addition to these interruptions, button strikes continue to be an irritating cause of restricted production. One of the mines, of the Temple Coal Co., of Scranton, employing about 800 men, has been idle for six weeks on account of a button strike. The Nesquehoning colliery of the Lehigh Coal and Navigation Co. was thrown idle from the same cause on Monday, Oct. 23, and was followed by the Tamaqua colliery of the same company on Oct. 28. The idleness at Nesquehoning has deprived the public of 3,500 tons of coal a day, and has prevented the miners at that place from earning an aggregate daily wage of from \$6,000 to \$6,500.

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Payday Holidays Are Breaches of Anthracite Contract

A statement issued a short time since, by the Anthracite Bureau of Information at Wilkes-Barre, reviewed the so-called button strikes which had interrupted mining operations in the anthracite region, and had caused much loss of time and wages. The matter was finally brought before the Board of Conciliation as a mine grievance, the contention of the operators being presented by W. J. Richards, president of the Philadelphia & Reading Coal and Iron Co., himself a member of the board. Since that time the stoppages on this account have been less frequent; but button strikes are not the only causes for curtailment of production to which the operators are subjected. The inclination on the part of some of the anthracite mine workers to abstain from work upon the slightest pretext has been shown during the past two months at the Centralia colliery of the Lehigh Valley Coal Co. For six consecutive "paydays" the 1,500 employees remained away from work because they were dissatisfied at the hour set by the company for paying their wages.

Prior to the agreement of May, 1916, the practice of the company was to pay the men as they presented themselves any time after the arrival of the pay cap, or from about two o'clock in the afternoon, until all had been paid. With the signing of the new agreement by the representatives of the United Mine Workers, the employees had pledged themselves "to work 8 hr. per day, six days per week if the operator desires to work his mines to that extent, excepting only legal holidays." The company, following both the letter and spirit of this clause in the agreement, set the time for the payment of the employees at 3.40 p.m., so that there would be no interference with the regular operation of the colliery. Through notices published conspicuously in and about the various shafts which feed the breaker, the management announced its intention to pay certain exempt classes at any time in the day after the arrival of the paymaster. Those so favored in-

cluded the men on cross-shifts, on night shifts, and those who because of unfavorable working conditions had left their places of employment before the termination of the full 8 hr.

Despite repeated assurances from the company officials that men who had been working in wet, smoky, or badly ventilated places and had quit ahead of regular quitting time would get their pay with the least possible delay, the malcontents were able to tie up the operations centering at Centralia on six consecutive paydays at a cost to the men alone of about \$14,000 in wages, and at a sacrifice in output of at least 10,000 tons at a time when every ton it is possible to produce is needed to meet the demands of the public for fuel.

At a recent meeting of the Board of Conciliation on Oct. 9 this payday question was discussed. The colliery grievance committee of three members, after some lengthy questioning, acknowledged that the men in the four locals they represented were not only violating the "8-hr. clause" of the agreement, but also the clause which provides that grievances should be presented regularly to the board. The committee promised to advise the men to that effect and to exert themselves in an effort to have the colliery fully manned on the next payday. That they succeeded is shown by the fact that on the subsequent payday, Oct. 13, the employees stayed at work the full 8 hr.

Violence as a Strike Weapon

It is doubtless true that miners, as a whole, are opposed to violence in strikes. When they do use it they are more prone to apply it to those working men who refuse to obey the dictates of their fellows than to direct it against the property of the employing company. But just lately there have apparently been three instances of wanton destruction of property. In two of these the work was done so secretly that a doubt remains as to whether they are really exhibits of union activity.

"Coal Age" has already recorded the burning of the tippie of the Central Coal and Iron Co. at Central City, Ky., under circumstances strongly suggesting incendiarism. Last week the explosion of the Eleanor slope of the Rochester & Pittsburgh Coal and Iron Co. and the destruction of a mining machine at Minooka, Penn., seem to show that some, probably foreigners, still believe that violence will help their cause.

It is necessary, however, to detail the conditions leading up to the former act of violence. The Rochester & Pittsburgh Coal and Iron Co. has long recognized the union, but being strong and aggressive it has been given somewhat favorable treatment. The mine workers of that company saw in the present demand for coal a good opportunity to even up conditions in central Pennsylvania.

At noon, Oct. 16, the mine workers at Adrian, Florence, Helvetia, Walston, Reynoldsville and Frostburg, all in Jefferson County, Pennsylvania, went on strike. The outside men demanded an 8-hr. day instead of the 10-hr. day now obtaining, the daily wage to be retained at its present figure. At Florence and Wishaw the miners objected to car-pushing. They demanded that the mules deliver the cars at the face and remove them when filled. The miners of Florence mine declared that the weigh scale did not give fair weight.

The last demand raises a question of fact, but the other demands are clearly in violation of the agreement recently made. We may sympathize as much as we will with the 8-hr. day, and not condemn in any way the interest of the miner in the abolition of car-pushing—though that abolition will surely result in the closing of some mines—but no matter how we may feel on those issues we cannot fail to condemn the mine worker who makes an agreement in the summer and deliberately breaks it by a strike in the fall. It is no excuse to say that the locals at these places did not ratify the agreement. They are a part and parcel of the district union. They cannot advocate collective bargaining and then excuse themselves because they personally do not like the collective bargain thus made. The last demand raises a question of fact, but the other demands are clearly in violation of the agreement recently made. We may sympathize as much as we will with the 8-hr. day, and not condemn in any way the interest of the miner in the abolition of car-pushing—though that abolition will surely result in the closing of some mines—but no matter how we may feel on those issues we cannot fail to condemn the mine worker who makes an agreement in the summer and deliberately breaks it by a strike in the fall. It is no excuse to say that the locals at these places did not ratify the agreement. They are a part and parcel of the district union. They cannot advocate collective bargaining and then excuse themselves because they personally do not like the collective bargain thus made.

As for the miners' other claim that low coal has just made its appearance and should modify the contract, this argument, though not quite true, seems more reasonable. But low coal has been quite general in the district for which the contract was written, and it might readily have

been anticipated. Most of the coal in District No. 2 is lower than that at the mines recently on strike.

The miners claim on their part that the company has not kept its agreement and that the adjustment of grievances is long delayed. The statement of the miners at their meeting held Oct. 22 was as follows:

The unions involved in this strike are those which never agreed to the general scale that was accepted by this district early in the year. These locals were overruled at the time by the referendum. The car-pushing proposition was merely a verbal agreement, the company undertaking to abolish car-pushing at the time the scale was signed by the union officials. The practice of requiring the men to push their own cars has not been appreciably reduced since that time.

The contract negotiated for the district was one-sided, and when the agreement is violated it is impossible to secure the cooperation of the district officers in the adjustment of these violations except after a long drawn-out wait. When complaint was made of a violation of the stipulations of the agreement at any of the mines, no attempt was made to adjust them unless the matter was meanwhile taken up by the grievance committee. Dead work is not being paid for as it should be, and the demand for extra compensation for low coal which is now being made is justified by the fact that no low coal was being mined when the scale was negotiated.

The actual scale demanded was as follows: "Eight hours work and 10-hr. pay for all outside men, time and a half for overtime and double time for Sunday; the Yatesboro scale for cutters and scrapers, 43½c. per hour for the cutter and 34.65c. per hour for the scraper, the same scale for all inside labor or a minimum of 34.65c. per hour, 10c. extra per ton for all coal that is 4 ft. thick or under.

"The double check and Big Soldier system for taking out pillar stumps which provide that "where men are working in the pillars they shall take out the stump and receive pick price for the same; 8c. a ton for pushing cars; a differential of 5c. a ton for coal mined by the chain machine over that mined by punchers; 5c. a ton on all coal mined.

"The checkweighman shall have power to test the scales, provided that he does not interfere with the work at the tippie, the standard weight car system shall be abolished; time and a half shall be paid for overtime work inside the mines by all the company men and double time for Sunday; the company shall furnish electric lamps free of charge."

On the day previous to the issuing of the statement, Oct. 21, the miners met B. M. Clarke, the counsel for the company, but he refused to enter into the matter with them, saying that the pointed statement delivered to each striking miner represented in full the company's position in the matter.

The company has issued the following statement:

For many years we have stood your strikes and the violations of your contracts without seeking the aid of the courts in the enforcement of our contract rights, but we feel now that we are compelled by your actions to demand redress. We therefore propose to start actions under this contract against the union as an organization and against you individually for the damages which we have already sustained and will later sustain by reason of your violation of contracts.

We have already prepared and placed in the hands of the commissioners appointed under the terms of our mutual contract a complaint against the union as an association and against you individually, setting forth your violation of the scale contract, and we propose to bring actions in the courts against you individually and as an association for the damages we have sustained and will hereafter sustain.

The mine workers held a meeting Oct. 23, and they then proposed to bring out their coworkers in Indiana and Clearfield counties. The strike would have been a big one, for the mines affiliated with the Rochester & Pittsburgh Coal and Iron Co. mine about half the production of central Pennsylvania. An extension of the strike would have been equally a violation of contract, for most of the mines are unionized and are subject to contractual provisions. It will be noted from the miners' own statement that the district officials have not supported the miners in many of the points where they desired to wrest advantages from the operating company which the contract did not provide, and the leading officials were from the first opposed to the strike.

Late on Sunday afternoon, Oct. 22, Eleanor slope, one of the large producers of the R. & P. C. & I. Co., located 8 mi. from Punxsutawney, was wrecked by an explosion. No one was in the mine at the time.

The mine is gaseous and is worked with safety lamps. Only the firebosses were known to have entered the mine on Sunday, and they had made their examinations and declared that conditions were all right. Of course some man may have gone in to find his tools and may have lit a match or used an open lamp, causing the explosion. But in that event his dead body would almost certainly have been found.

It is thought quite likely, however, that the explosion was caused by a blast of dynamite ignited by a slow fuse, the conditions being made favorable by a tampering with the ventilation system. By short circuiting the air provision could be made by which gas would accumulate in the working where the blast was fired, thus insuring a disastrous explosion. Should a body yet be found under the debris that discovery would remove the charge from the shoulders of the strikers.

In this connection it is interesting to remember that in the vicinity there have been two mysterious explosions, one at least—the first one at Adrian—occurring when no men were in the mine. On that occasion two men were killed in a hasty attempt to save men who were believed to be entombed. Some people believe that the second explosion in Adrian mine in 1911 was not started by the two men who were the sole victims of its direct violence. It was noted that where the force of the explosion was most marked no men were ever found.

It was the generally accepted opinion at the time that the explosion was neither spontaneous nor the work of desperadoes. It was thought that the two men on their way to work ignited the gas and that the explosion extended and as it traveled gained force, either from the combustion of dust or from the presence of larger quantities of firedamp near the face of the workings. Neither this last explosion nor the first in Adrian can be so explained. Malice appears to have been the origin of these explosions.

The United Mine Workers of America deny that their men are responsible for the recent explosion at Eleanora the damage from which will amount to almost \$50,000.

It should be added that the R. & P. C. & I. Co. mine workers voted after a week's idleness in favor of returning to work and agreed to leave the questions at dispute in the hands of a committee of eight which will confer with the district board.

B. & O. Rates from Connellsville

In our issue of Sept. 2 the rates from the Connellsville region east and west by Pennsylvania R.R. all-rail routes were discussed. The illustrations herewith have reference to the rates on the Baltimore & Ohio R.R.

The greater part of the Connellsville region, both the old and the new, are shown in Fig. 1 to have a rate to Chicago as



A, 0 to Chicago to +25¢ to other Points
Rate Districts in this Zone
Meyersdale-Austen-Bloomington-
Kingwood

B, -15¢ Rate Districts in this Zone
Penna. Finleyville-Scott Haven-
Washington Run-West Side Belt

C, -15¢ Rate District in this Zone
W.Va. Belington-Braxton-Clarksburg-
Fairmont-Junior-Monongah-
Moundsville-Ohio River-Opekiska-
Short Line

D, 0 Rate Districts in this Zone
Penna. Connellsville-Everson-
Fairchance-Klondike 1&2-
Mt. Braddock-West Yough
Pa. Md. Meyersdale
W.Va. Md. Austen-Bloomington-
Kingwood

Included in this Zone on
Shipments to Chicago

FIG. 1. CHART SHOWING RELATIVE COAL RATES OVER THE B. & O. R.R. WEST FROM WESTERN PENNSYLVANIA



E, -40¢ Rate Districts in this Zone
Austen-Bloomington-Kingwood-
Meyersdale

F, -15¢ Rate Districts in this Zone
Belington-Braxton-Clarksburg-
Fairmont-Junior-Monongah-
Moundsville-Opekiska-Short
Line

G, -15¢ Rate Districts in this Zone
Connellsville-Everson-Fairchance
Mt. Braddock-Scott Haven-
Washington Run-West Side Belt-
West Yough

H, 0 Rate District in this Zone
Finleyville

I, 0 Rate District in this Zone
Klondike Nos. 1 & 2

FIG. 2. COAL RATES ON B. & O. EAST FROM WESTERN PENNSYLVANIA HAVE DIFFERENTIALS INDICATED

high as any tributary to the Baltimore & Ohio. It has no advantage over the Myersdale-Somerset, Elk Garden-Piedmont or the Georges Creek fields in the Chicago market, though it would appear that it should have been given such an advantage. These three districts just mentioned have a rate 25c. higher to other points west, but to Chicago it is all one whether the coal comes from Eckhart, in Maryland, or from a point opposite Rice's Landing in Pennsylvania, some 58 miles farther due west and much farther as measured along the lines of transportation.

The two areas marked B and C on the map, including the Westmoreland gas-coal district, a large part of the Panhandle steam-coal district and all the Fairmont district, are given a freight 15c. lower than that in the Connellsville region. This is not unnatural, as they lie nearer the Western market than districts A and D.

Fig. 2 shows the condition for eastward traffic. The field which had such favorable freights to Chicago has also a 40c. differential over the Lower Connellsville region in its entry to Eastern markets. The latter region shares in the high rate with one around Finleyville south of Pittsburgh.

The Connellsville region proper has a rate 15c. lower than the Lower Connellsville region and shares an equal rate east with the Fairmont district. The map fails to show any rates east from the Panhandle steam coal district except so far as the Finleyville area is concerned. It apparently assumes this area as being permanently out of the Eastern market, as it is, partly by reason of freight rates, but largely because of the poorer quality of its fuel.

The maps are based on those presented by the Connellsville Coal Tariff Association to the Interstate Commerce Commission at its recent coal-freight hearing.

The Municipality of Melbourne, Victoria, has issued a memorandum desiring that the Government provide for the sale on the open market of the coal produced from the state-operated Wonthaggi mine. The coal is now produced under the control of the state railway commissioners, who both produce and use their product, and only develop enough to supply themselves. They deliver it at Melbourne for \$3.56 a ton whereas the private dealers ask \$9.72.

Editorials

The Coal Shortage

The anticipation of a possible fuel shortage precipitated a flood of hysterical buying the past week, which resulted in forcing prices up to levels exceeded only by the acute conditions incident to a strike market. Reckless bidding for coal of the character witnessed during the week has a deplorable psychological effect on the market that will only accentuate the difficulty. At the same time, however, it is useless to minimize the seriousness of the situation. It is best to keep cool, but just the same we must face the issue squarely.

As is always the case, it is not a question of production, but one of transportation; and an analysis of the carrier situation presents little of encouragement. Apparently the meager revenues resulting from Governmental regulations has made it difficult or, in a great many instances, impossible for the roads to keep up with the increases in their business. Were the coal operators able to obtain adequate shipping facilities, they could amass fortunes at the current market prices in a relatively short time.

As it is, there is not only shortage of equipment, but severe congestion in many instances, this latter being frequently brought about by trains becoming stalled because they could not make division points within the allotted time. The low-water stage on the Ohio River has only served to accentuate the difficulties. Whether the investigation now being conducted by the Interstate Commerce Commission at Louisville, Ky., will bring any relief is highly doubtful; we are facing a condition, not a theory.

The big constructive factor in the situation is the long drawn-out warm weather, which has been a potent influence in restricting domestic consumption. But even this obviously cannot continue indefinitely, and when the first snow flies we hesitate to predict what may happen. It is a well-established fact that the dealers are not strengthening their reserve stocks as they should, because of the high prices ruling. When the first cold weather comes, with its accompanying rush of urgent orders, there is every reason to believe that the available stocks will prove to be at a distressingly low level.

The statistical position of the hard coalers leaves much to be desired. The statement of shipments for last month showed a loss of over 100,000 tons as compared with the same month last year, which may be taken as indicative of the labor and transportation difficulties prevailing in the mining regions; nor are there any reasons for believing the October statement will show any improvement. In fact the reverse is true. That the anthracite companies anticipate a tight market is further evidenced by the unexpected increase in circular prices, an unprecedented move at this period of the year, and one which would ordinarily excite a vicious newspaper campaign against them. Further evidence that the shortage is a stern reality is seen by the reports from dealers having strong connections with old line companies who have been forced to pay premiums for the first time since the anthracite strike of 1902.

An important contributing factor to the tense situation is a demand for extra tonnages in certain quarters that must be met irrespective of prices. An instance of this is the urgent call for fuel in the steel industry. The steel mills are making a profit ranging from \$25 to \$50 per ton of steel. The working schedules of the mills have been substantially increased since the last fuel contracts were negotiated, and they have been forced into the open market to obtain the extra tonnage required. With such extraordinary profits in view they are not disposed to take any chances on having to shut down, with the result that there has been some active bidding. This has been instrumental in forcing the market up to the present high level. Nor is this urgent demand confined entirely to the steel industry. Public utilities and like industries, which must continue in operation at all costs, have been frequently forced into the market.

As is always the case in an unsettled market, startling and unexpected reports of all kinds are pouring in. We hear of ocean steamers being compelled to make three different piers to obtain a bunker cargo, and of Lake freighters bunkering at the upper ports, for perhaps the first time in the history of the Lake trade. Middle Western coals are moving into markets to the North, East and West—markets it was never expected they would reach. Active negotiations for Illinois coal are noted in the heart of the rich producing district of Ohio, and inquiries are being received from as far west as Idaho, Utah and Wyoming, while large consumers in the far Northwest are already anticipating a shortage at the upper ports and are placing considerable orders with the Middle Western buyers.

The Middle Western Situation

A very serious coal shortage now prevails in the Western consuming territory. Prices of all grades are at least one hundred per cent. higher than at this time last season.

Demand for high grade domestic coals is considerably in excess of the supply, and free spot offerings of any consequence are very scarce. The steam trade is taking new and unexpected turns as for instance, inquiries are being made from a number of points which are usually considered foreign markets for Western steam coals, such as Detroit, Cincinnati and other Ohio points, and certain Northwestern territory which has heretofore bought Lake coal exclusively. Illinois coals are also being quoted in answer to inquiries from Idaho, Utah and Wyoming.

Shortage of railroad equipment for moving normal production of the mines is mainly responsible for the stringency of coal. The railroads, owing largely to oppressive legislation have been unable to buy sufficient new equipment, while on the other hand they have been called upon to handle an extraordinary volume of traffic. Undoubtedly there is also some delay, particularly at terminals, which could have been improved had sufficient foresight been exercised. But the most significant fact is that railroad officials generally agree that there is no

chance of an improvement in the situation until next spring.

The labor situation is also causing much concern, and at a number of Western operations sufficient miners and day men are unattainable to fully complete the working forces each day. It is also the opinion of many operators that the shortage of labor will become more acute as the winter season progresses.

It is a keen disappointment to operators, who have, at heavy expense provided themselves with modern equipment and all the facilities for production of maximum output and improving sizing, and not being able to realize upon this investment by reason of only a fifty per cent. car supply.

Everything points to a much higher level of prices with the first snow flurry, and unless means can be found to increase the transportation of coal from the mines a very serious situation will prevail all over the Western territory.

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Steel Industry Demands Fuel

Years ago, Mr. Carnegie remarked that the steel industry was "either a prince or a pauper," but the conditions he had seen did not approach those which now obtain. Mr. Carnegie grew rich by making profits of a few dollars per ton, whereas now the profits of the steel mills range from \$25 to \$50 a ton, according to whether they are making war or peace material and filling old or recent orders.

Steel is more than a prince now; it is a czar, but its power is simply money. It must have fuel at any price, and as the supply is unequal to the demand prices for spot coal and spot coke have been bid up to fabulous levels. A few consumers, such as public service corporations, must have coal; and while to pay present prices might be ruinous in the long run, they must pay them as service must be continued.

The first important rise in coal prices occurred through Eastern buyers bidding prices up, and the advance affected many districts about equally. The latest rise has come from the bidding of the steel mills in the Pittsburgh and Youngstown districts, resulting in prices—as quoted in our last issue as well as in this—that may be denominated fabulous.

The greater part of the coal consumed by these steel mills is on long term contracts, which are taken by coal producers as "back-log" business, at a sliding scale depending on the mining rate. This year's settlement price averages probably \$1.25 or \$1.30 per net ton f.o.b. Pittsburgh district mine. With the requirements unprecedented and with car supplies very short, the full shipments are not made and the steel mills have been buying coal in the past two or three weeks at prices ranging from \$4 to \$5, sometimes even higher.

At these prices the ordinary buyer must stay out of the market. To the steel mill it is nothing, as the average cost of the total coal consumed is not greatly increased, and even if it were the price would have to be paid. The heavy profits on steel production will not last beyond the war, and a ton of steel production lost would represent a loss of profit of precisely so much.

With coal it is a case of the steel mills outbidding other classes of consumers. With Connellsville coke the case is different, the steel works blast furnaces outbidding the merchant blast furnaces. The steel mills are, as

indicated, making enormous profits and must produce every ton of pig iron possible from their blast furnaces. The merchant blast furnaces, on the other hand, have their pig iron sold at fairly profitable but not at fabulous prices. Their coke contracts range in price from say \$2.25 to \$2.75, while their profits per ton of pig iron average perhaps \$2.50.

If the merchant furnace receiving insufficient supplies of coke on its contract should pay \$5 for spot coke in order to maintain full production, it would be foregoing all its profit; while if it paid a higher price it would actually lose. Connellsville furnace coke for spot shipment sold last week at as high as \$8, while this week's market is quotable at about \$7, representing practically three prices. There is no doubt that it is only the steel works that pay these prices, the merchant furnaces having to be content with the coke delivered on contract.

There is a possibility of coke supplies to the merchant furnaces being so restricted as to cut down materially the production and force a high market for pig iron, but the average furnaceman could not take advantage of the market because if he makes pig iron he should deliver it on his contract. In such conditions there is always the danger that the producer, whether of coke or of pig iron, may be tempted to sell at fancy prices in the spot market the material which he ought to be delivering on contracts at much lower prices.

The very high prices paid for Pittsburgh district coal furnish an augury of what may occur in the distributing markets later, where the stocks usually carried are reduced by dealers, rather than pay these fancy prices. If the scarcity continues, the real pinch will occur later, when the stocks are found insufficient. There is another factor, that at the removed markets the deliveries depend not only on the rate of shipment but on the time involved in transit. The haul from coal mine to steel works is usually short, and thus congestion of freight on railroads, such as now exists, affects the deliveries at removed markets much more than deliveries at steel mills.

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Are There Too Many Miners?

At the Miners' Day celebration held at Bellaire, Ohio, on Oct. 7, John P. White, president of the United Mine Workers of America, deplored the fact that there are too many miners and that in consequence there is not enough work in normal years to keep all of them busy.

In this he is partly right. There are seasons in every year when miners are in excess of any need and when the railroads also, it may be added, have more coal-carrying equipment than they know what to do with.

But there are also periods in every year when there are not enough miners and when the railroads cannot supply all the gondolas and hoppers demanded by the operators. This will always be the case unless the domestic demand ceases to be important, or some means is found to store soft coal as safely and economically as anthracite.

If the operators in West Virginia and Pennsylvania were to be asked, it is extremely unlikely that they would agree with Mr. White in deploring the glut of workmen in the industry. They would say that throughout the present year they have had room and work for many more men than they have been able to obtain, and that mine workers would be still more in demand this winter.

The trouble with the coal business is not to be found in its excess of miners. It is owing to the seasonal character of the demand, and if we cut down the number of persons employed in it to the small quota needed to take care of the summer's demand, we will find in the winter a number of extremely cold people and many industries and persons normally engaged in those industries laid idle.

Perhaps there are in normal winters a few more mine workers than are needed, not many but a few, especially when industry is experiencing a low ebb. If this is true, it is largely because the work of the miner is so desirable that few men care to leave it, and not a few are being constantly attracted to it. Its most busy days are in the winter and correspond with the slackest days of many other industries, especially farming. This is largely the cause of the success of operators in recruiting men to keep pace with the growth in the coal production. This success they have had despite the fact that the work is so radically different from other employments that men do not naturally gravitate toward it.

But there are other reasons for the growth of the mining population with the demand for coal—a growth that is quite steady and only fails when business is extremely active or when princely profits are being made and large wages paid, as in the case of the munition industries. For the most part, the miner is delightfully independent. In nearly all mines he can work when he will and leave off when he will. The attempt to circumscribe that liberty has not been markedly successful anywhere; neither the time of starting nor of quitting, or the hours for meals or the days worked are rigidly determined anywhere—not even in the anthracite region.

Another advantage which induces men to enter coal mines is that the temperature of the workings is uniform; the coal miner is neither frozen in winter nor baked in summer. Moreover, his work is better paid than most work equally unskilled. The day laborer in the coal mines is even now getting more than the roustabout in the ordinary plant and far more than the section hand on the railroad.

The 7-hr. day is Mr. White's specific for the ills of the mine worker. He advocated in his Bellaire speech a shorter day for the miner, but that industrial unit does not now as an average work any longer than 7 hr., and often not for so long a period. The time Mr. White is trying to reduce is really that of the coal-mine day worker.

The proposition is not one that will receive commendation from a public which is still working more hours itself. Nor will it effect what Mr. White hopes, for the reduced capacity in the winter months will only introduce more men into the industry. The winter will always offer the men work, for there will always be men idle in other industries at that season, and the cold will drive men into the coal mines to seek a livelihood.

One would think that the scarcity of work in the summer would make it more reasonable that the men should put in longer hours in the winter. If they did, they would keep out of the mines the competition that beggars them in the summer months. If there are too many men at work, let a few leave it if they can find any equally unskilled work that will pay them as well.

The trouble with the coal industry is that the miner is not like the paperhanger and the painter. When work

is scarce he seems least anxious to do it. He deliberately encourages the operator therefore to seek more men with whom he must compete in the lean times. If the miner would only work 7 hr. or perhaps 8 hr. in the winter months, the problem might be largely met.

Unfortunately, he has never been disposed to work even 7 hr. when the mines were running well, and because he has always worked in the inverse ratio to his opportunity therefore this inopportune solution is offered us whereby the country would appear to lose $12\frac{1}{2}$ per cent. of the productive efforts of all those engaged in mining. Of course the loss will not be that much, for the actual miner has for a long time helped himself to that $12\frac{1}{2}$ per cent. and often to at least as much more.

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Anthracite Prices Increased

As forecasted in *Coal Age* last week, some of the anthracite mining companies have increased the prices of their steam sizes, effective Nov. 1. As stated at that time, the continued and extensive advance in the price of bituminous coal left no other course open to the anthracite operators, as the demand for steam coal became such that an increase in prices was inevitable. The lead has been taken by one of the largest companies, and there is no doubt that it will be followed by other operators. As a matter of fact, the individual operators for several weeks past have been receiving prices even in excess of the ones just announced.

The principal change has been in No. 1 buckwheat, the most popular size for steaming. The larger companies are under contract for quite an extensive tonnage of this size at a price of \$1.50, dating from last May when the new wage agreement was signed with the miners. The circular price since that time has been \$1.65 for line shipment, but the larger companies do not enter into contracts with retail dealers on steam sizes, confining that business strictly to consumers, though on such coal as has been sold to the retail men the contract figure has been allowed. However, from now on all this business will be priced at \$1.65, and on new business a price of \$2 is being asked. Likewise, all new business on the other steam sizes, rice, boiler and barley, will be taken at the new prices of \$1.25, \$1.10 and \$1 respectively, all being for line shipment. Perhaps the greatest surprise is that all new business for pea coal will only be taken at a price of \$3. Inasmuch as this size is now practically classed as a domestic fuel, it would seem to open the way for an advance in the near future on all domestic sizes.

At New York an announcement of a new price list affecting Long Island and New England shipments from the mines was made by the Philadelphia & Reading Coal and Iron Co. on Tuesday of this week, which showed increases of 10c. per ton on egg, stove and chestnut; 15c. on pea; 10c. on buckwheat No. 1; 25c. on rice and 20c. on barley. The new price list is as follows: Egg, \$4.05; stove, \$4.30; chestnut, \$4.35; pea, \$2.80; buckwheat No. 1, \$1.65; rice, \$1.25, and barley, \$1.

The new circular announced at Boston on Nov. 1, f.o.b. vessel at Port Richmond for shipment beyond the capes of the Delaware, is as follows:

	Broken	Egg	Stove	Chestnut
White Ash.....	\$4.85	\$5.35	\$5.60	\$5.65
Shamokin.....	.....	5.60	5.85	5.90
Red Ash.....	.....	5.85	6.10	6.15
Lykens.....	6.15	6.35	6.60	6.65

Department of Human Interest

The Superintendent's Wife

SYNOPSIS—The worst enemy of discontent is work. The isolated life of the mining camp affords an excellent opportunity for the woman to improve herself. Gossip ruins many a mining career. It must be removed, for it cannot be fought. Expenses of the home.

"The love of a woman is the greatest thing that can enter into the soul of any man. It is a pure religion embellished with the primal instincts of clean passion. It makes him appreciative and tender; loyal and true; it resurrects him from dead ambitions; it revivifies his mentality. It is THE WOMAN that makes the fight worth while, that makes the goal seem nearer. When the ONE WOMAN comes, he clings to her and through her edges himself into the enchanted vale of Earth's Paradise."

The above quotation, written by a man, is one that every woman should memorize and keep constantly before her. Its realization applied to her everyday life will keep her the *one woman*. On the other hand, the vain woman who feels this love as a power through which she may establish control over her husband vainly deludes herself. This love illusion of the man must shortly be supplemented by comradeship, or the emotional attraction will wear out.

It is in the upbuilding of this companionship that the wife of a superintendent has great and unusual opportunities, as a homemaker and as an assistant in business.

In the city home, the woman's work has been so largely taken from her that her duties are of a new order. Competent maids, hotels, clubs, the opera, the laundry and the tailor, have all tended to displace the old time home-making occupations. One might assert that this is the ideal life, as the mother is not so tied down by hard work that she must forego all pleasure and social life. It is in fact ideal for the ones who use this extra time to make life ideal. But the woman who uses little forethought is worse off in her home life than if she had been obliged to perform all her own work. We see the result of this in the cities. In Chicago, recently, a judge traced 24,000 cases of juvenile delinquency to parental neglect or incompetence. The financial success of the family is a poor substitute for strong family ties.

CONTENTMENT THE FIRST REQUISITE

In the home is where we see the acceptance or rejection of the greatest opportunity offered to you, the superintendent's wife. To begin with, you must either superintend an incompetent maid or do your own housework. After this is done, how do you spend your extra time? You can't spend it in the shops or at the social game as in the city; in fact you are limited to either gossiping with your neighbor, or in the improvement of yourself and your home life.

Contentment is that condition in which we do not want the things we know we cannot have. The first thing a wife must do is to make herself contented. We might make a hair-splitting distinction and say that it is not necessary for you to be satisfied to live in a coal town all your life and to care for nothing you have not, but it is vitally necessary for you to learn the lesson of the old philosopher who said, "I have learned to be content whatever the condition I am in."

The worst enemy to discontent is work, particularly mental work. Whatever your greatest ambition is, begin now to work toward the gratification of it. It is certain that your more or less isolated life will afford you better opportunities than you will find at any time hereafter. Whether your ambition is centered in cooking, house-keeping, society, music, or art, the efficient magazines and the numerous correspondence courses give you ample opportunities to improve yourself.

You will feel the happiness of achievement in your work and thereby create a restful contentment in your home life. Nothing can have a more inspiring effect upon your husband than this peaceful blessing of a harmonious home. Not only does he have peace of mind, but his ambition is spurred and his earning power increased. Whatever you do, do not nag. If you feel that your husband neglects you, or that your attempts to build up a strong companionship and unity are not appreciated and that it is necessary for you to speak to him about this seeming negligence, talk briefly and kindly about it and keep your tongue. Realize that you can work with him, but that you can't live his life; also that the nagger never gets anywhere except outside of everybody's love and respect.

A FACTOR IN THE SOCIAL LIFE

The opportunity is yours to become a modern mother-of-the-home; to show the charming hospitality to your own husband and children, the delightful kindness and the most exquisite courtesy every day. If charity covers a multitude of sins, surely kindness cures a multitude of troubles, besides being one of the pleasantest things in the world even if you have no trouble.

A contented, united social organization accomplishes the most in a coal town as well as elsewhere. In the coal town where the wife's social prestige is established by her husband's position, she has an exceptional opportunity to strengthen or weaken the chain of organization. The average assistant's wife and most of the others feel that their husbands are capable of performing the tasks ahead and are naturally sensitive of any criticism as to their husbands' incompetency. If the men hear tales concerning each other, through the medium of the superintendent's wife, it is going to be only a short time until the superintendent's prestige will decline. One man recently resigned his position because of gossip that made his organization too weak to stand. His wife told him things as she heard them from her neighbors who saw to it that she never missed a criticism.

Another superintendent recently discharged two men because their wives kept up a continual gossip in their own neighborhood in spite of the fact that he had warned them several times. He said to me: "In my work I can fight whisky, fire, carelessness, ignorance and most any other evil but gossip. I have never seen anyone try to straighten it out but what he gets it more entangled. I don't fight gossipers, I remove them from my organization."

INTEREST IN YOUR HUSBAND'S AFFAIRS

To strengthen the ties of companionship still more, make up your mind to become sufficiently interested in your husband's work to be capable of understanding it. Do not be content to say: "Well, I really don't know anything about the kind of coal at this mine or how they make coke, as I never meddle in my husband's affairs." This attitude is a true sign of the lack of interest in a husband's vocation.

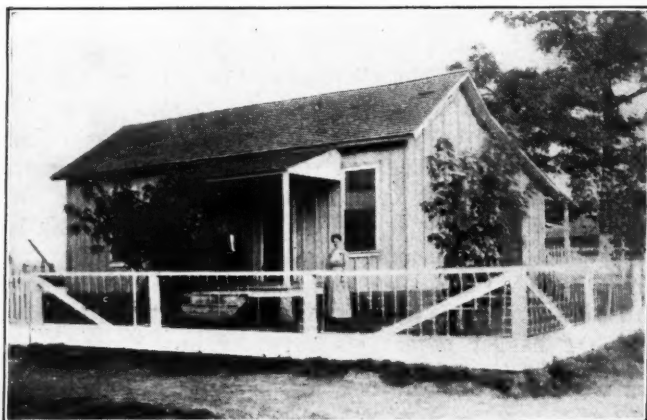
One should at least be able to converse intelligently about this wonderful product of the earth, and this knowledge cannot be gained by asking vague questions

of your husband. Study some of his books and become a constant reader of *Coal Age*. When you have found something you can't fathom, your husband will gladly assist you in your study.

No, it is not necessary for you to become so advanced as to give him instructions about his work; but if he is capable of advancing, you will necessarily be thrown with men and women of higher rank, and it will be much to your advantage socially to be able to understand your husband's business. He will never be ashamed of your knowledge.

The freedom from the temptation of extravagance that assails the woman who dwells in the city will enable you to have more pin money and fewer household expenses. Create the habit of wise saving as well as wise spending, and when you do become a resident of the city you will be able to avoid many mistakes. Keep your household expenses tabulated and be proud to show them to your husband; for in so doing you will gain his confidence and will create a close harmony in the spending of money. This harmony is one of the chief cornerstones in the foundation of a life-long companionship.

Making Livable Mining Villages



NEAT TENEMENT OF MADISON COAL CORPORATION
Won a prize for best-kept place, front and back



MINING AND MECHANICAL INSTITUTE, FREELAND, PENN.
Built by a philanthropist for use of his miners



A STREET IN A SOUTHERN COAL-MINING VILLAGE
A good beginning; needing, however, another sidewalk, fences, flower gardens and a graded street



BATH HOUSE OF DELAWARE, LACKAWANNA & WESTERN
An improvement that enables the miner to look like a respectable citizen when on his way home

Discussion by Readers

Shortage of Labor in Mining

Letter No. 7—I would hardly be doing my whole duty if I did not add a word to what has already been said in regard to the shortage of labor in Pennsylvania mines. Being a foreman myself, I have been much interested in reading the letters on this subject, as we have been more or less crippled at our mines for the lack of men. The same has been true in all the mines operated by my company.

In his *Letter No. 2*, *Coal Age*, Aug. 26, p. 360, John Bohn remarks that "it is largely the foreman's own fault" that he is unable to get men to work, adding that "the reason, in most cases, is that he does not treat them with equal fairness." I cannot agree with Mr. Bohn in this regard, for the following reasons: (1) Some mines do not suffer in this respect because they are the only mines in their respective districts. (2) Other mines are working in better coal. (3) Still other mines work more regularly. These or other reasons induce men to flock to such mines.

It is not so much a matter of what kind of a foreman is in charge of a place. If the conditions are satisfactory underground, men will generally be plentiful, but where the conditions are the reverse of this, the foreman will be more or less hampered by the lack of men, regardless of his treatment of them. He may be the best foreman to be found anywhere, but the conditions in the mine will keep the men away despite his best efforts.

For example, take a mine where the coal is never more than 3½ ft. The foreman does everything in his power to help the men in their work; they never have to wait for cars or material of any kind, which is supplied them promptly and in abundance. But the coal is hard and dirty and the sulphur bands must be separated from the coal before loading. It is not strange that there is a scarcity of men in such a mine.

The condition of a shortage of men is not confined to coal mining alone. I have a brother in Detroit, Mich., and he writes me that they are short of men there. Only two years ago men were so plentiful that it was difficult for many to find employment. The question that men are asking today is, "What has become of the laboring classes?"

SAMUEL JONES.

Madera, Penn.

Letter No. 8—A good deal has been said about there being a shortage of labor in the coal mines. I want to suggest that, instead of looking for greater immigration from Europe to supply this need, it would be better to employ some of the idle labor at home.

According to the Illinois State statistics, there are about 30,000 miners in this state. Of that number, I believe there are at least 50 per cent. who cannot work a hundred days in the year, and the remainder do not work full time. The result is that many of these men are idle so much of the time that it is difficult for them to support their families.

When I left the old country and came to America four years ago, I expected to find the conditions much better than they were in my own land. But what an illusion! I have never worked a full month yet. What does all this cry of scarcity of labor mean when there are so many workers idle?

Would it not be a good plan for operators to take steps that would improve conditions in coal mining and make labor more uniform and continuous in the mines in the different states? This may prove a large question to handle, but it is an important one to all the men who must depend on their work in the mines for a livelihood.

It is foolish to expect that there will be a larger immigration to this country when the war is ended. There has been such a large number of men killed, and a larger number crippled, that there will be few who would be able to leave their own country if they desired to do so. Moreover, there will be plenty of work for them at home at the close of the war.

GASTON LIBIEZ.

Peru, Ill.

Mine Haulage

Letter No. 4—The letters relating to the various phases of mine haulage have led me to wonder why there is not more attention given to reducing the accidents that occur each year in the mines, caused by the movement of cars. The Federal Bureau of Mines has devoted a great deal of time and energy to the study of the question of gas and dust explosions, and has investigated every known device for safeguarding the lives of men from this cause.

In every coal-mining state there is one or more mine inspectors charged with the duty of seeing that the mines are operated in compliance with the mining law. These, however, devote most of their attention to seeing that the mine is free from gas and dust, or that the latter is properly dampened and other precautions taken to prevent ignition and explosion.

The report of coal-mining fatalities for 1915, published by the Bureau of Mines, shows that there were 347 persons killed by cars and locomotives underground and 62 persons on the surface, making a total of 409 fatalities from this cause, in a single year. The same report shows that there was a total of 475 persons killed by gas and dust explosions, powder explosions and suffocation by gas. The report shows the need of the exercise of more care in the study of all that relates to mine haulage.

Not only should inspectors give the matter of haulage more attention, but coal operators, also, would do well to regard the laying of tracks and the maintenance of good roads in the mine as of the utmost importance. Good haulage roads are an essential factor in keeping down the cost of production of coal and, at the same time, reducing the fatal accident rate in the mine.

The work of the tracklayer is as important as that of the fireboss, and yet too often he is regarded only as a shifthead and paid wages that are not in proportion to the

work he must perform. It would seem that there is not enough attention given to proportion the wages paid to men in the mines according to the work performed. I have laid tracks myself in mines for \$2.75 to \$3.15 per day, when my helper received the same amount and had no responsibility for the work.

Much has been said about the efficiency of mine foremen, firebosses and miners, but there is just as much need for efficient tracklayers as there is for any other class of labor in the mine. The employment of an experienced tracklayer, with good assistants, will go far toward reducing the fatal accident rate in every mine and, in my opinion, is one of the important features in the successful and economical operation of a mine.

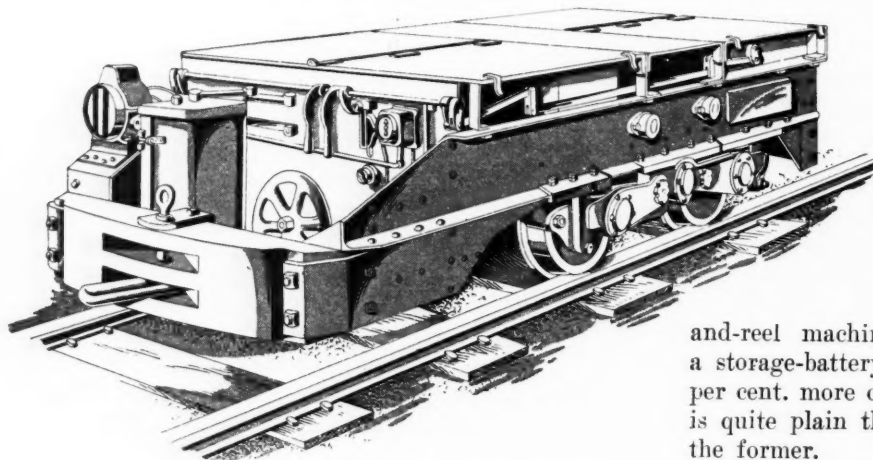
Farr, Colo.

ROBERT A. MARSHALL.

Gathering-Motor Haulage

Letter No. 5—I have been much interested in the discussion in *Coal Age* relating to mine haulage and desire to add a few words in respect to the peculiar advantages of the storage-battery locomotive, in certain branches of the work underground.

A system of haulage that is rapidly coming into favor in West Virginia mines is to use the trolley locomotive



STORAGE-BATTERY GATHERING LOCOMOTIVE

on the main entries, while a storage-battery locomotive is operated on all cross-entries to gather the coal from the rooms. The favorite practice seems to be to locate the double parting on the main road at the point most convenient to the mouths of the cross-entries; or, a parting is frequently located on one of each pair of cross-entries close to the mouth of the entry.

The work of the storage-battery locomotive is to take the empties from the parting and distribute them to the working places, giving each miner his proper turn of cars. Having distributed the empty cars, the locomotive starts to gather the loads from the rooms and haul them out to the parting on or near the main road, where a trip is made up to be hauled out of the mine by the trolley locomotive.

The advantages of this system are obvious, not the least of which is that it eliminates the necessity of trolley wire and track bonding, which is not a small item of expense with copper at its present price. Again, all danger of the miners coming in contact with a live wire at the working face, or on the haulage road of the

cross-entries, is removed. This method is especially advantageous in the working of thin seams of coal, as storage-battery locomotives are built as low as 30 in., and there is no necessity of brushing the top or lifting bottom on the roads, which would have to be done if fuel or trolley locomotives were employed.

Some mines use what is termed a "cable-and-reel locomotive," for the gathering haul. That type of locomotive, however, will often require rail bonding in the rooms, unless a double cable is employed. Greater headroom is also necessary, which may mean some brushing in the rooms. The reel locomotive possesses the disadvantage of operating a reel with from 200 to 300 ft. of cable attached. There is much time lost in repairing broken cables, to say nothing of the extra expense required to supply and keep these in repair. In many instances an extra man is required to look after and assist with the cable.

The only objection so far advanced to the storage-battery locomotive is the cost of the batteries. This, however, is not a material objection at the present time as batteries have been developed that will last from two to four years and these are sold at a low cost. Assuming the life of the batteries is two years, and comparing their cost with that of copper wire, bonding and twin cables,

together with the cost of upkeep and attendance, it will be found that the expenditure for these items will far overbalance the cost of storage batteries for the locomotive for the same period of time. Again, an important item in the operation of these two types of locomotives and one that favors the storage-battery machine, is the fact that the latter requires considerably less than half the amount of current required to operate a cable-and-reel machine. Moreover, when one considers that a storage-battery locomotive will handle from 25 to 50 per cent. more coal than the other type of locomotive, it is quite plain that there is a large balance in favor of the former.

Ironton, Ohio.

G. E. ALLOWAY,
Ironton Engine Co.

Coal-Mining Examinations

Letter No. 4—I cannot say that I agree with all that William Crooks has said in his *Letter No. 1, Coal Age*, Sept. 23, p. 513, in regard to coal-mining examinations. I have always considered that the Pennsylvania mine foremen examinations have been fairly well up to date and that the questions asked are generally practical. However, according to the view of the matter taken by Mr. Crooks, we may be a little behind the times. Perhaps an examination containing questions something like the following would be more to the point, in his estimation.

What is the most important part to oil in a shortwall machine? Where would you look for the trouble if the mine telephone was out of commission? What would you do if the field coils in a motor were on fire? How long would it take a brakeman to haul the cable back from the motor to the face of a 250-ft. room? For the oral examination, perhaps the candidate should be asked to take a breast machine apart and assemble it; build a separation door and hang it; or lay a 60-lb. switch.

These are all practical questions and there are thousands of similar ones with which the mine foreman should be acquainted. It might even be interesting to the examiners to see if a candidate could tell how many shovelfuls of coal a miner can throw into a car in 5 min., or state what is the minimum speed limit of a motor.

CANDIDATES MUST KNOW THE THEORY OF MINING

Now, in Pennsylvania, I believe the examining boards prefer to find out what a man knows about ventilation, and to ascertain his ideas in regard to the action of a siphon or a pump; or to see what knowledge the man has of the gases met with in coal mines. I believe our examiners understand the value of practical questions to a mine foreman, but the time has passed when they were willing to throw aside the theory of mining as a thing that is not necessary in determining a candidate's fitness for this position.

Personally, I always consider that it is impossible for a man to be the same after he has devoted a few years to the study of the theory of mining and his knowledge is not limited to his practical experience. When a man commences to study, he is like a boy who has not been to school until he has reached the age of 15 or 16 years. When he has mastered the alphabet and commences to learn short words, his thirst to know more increases, and his conception grows as he learns. Things that did not interest him before now become real, and he wonders that he did not see them in the same light before.

I do not say that it is essential that a mine foreman shall know how to work problems in algebra, or even to survey a mine; but a knowledge of algebra sufficient to handle simple formulas will broaden his mind, while a knowledge of surveying will give him a clear idea of angles and enable him to read a mine map more intelligently. In the same manner, it may not be essential for a mine foreman to analyze the mine air, but a knowledge of its component parts is one of the first steps in practical mine ventilation.

EFFECT OF STUDY ON A PRACTICAL MINER

As an illustration of the value of theory in the practice of mining, ask the average miner a few of the elementary questions on ventilation, and he will not be able to give you an intelligent answer. Nine out of ten miners cannot tell you, five minutes after they have left the mine, in which direction the air was traveling in their working place. But let one of these men start a course of study, and he at once becomes interested in everything pertaining to mining and begins to see things in a different light. Now he understands that air, like everything else, must obey certain laws.

The average miner knows little about geology as it affects the coal formations. Such a knowledge may not enable him to get out more coal, but it will often protect him against the danger of hidden fault lines in the roof, or the presence of gas when approaching faults or other troubles in the seam. A knowledge of these physical conditions gives the miner a broader sense of his surroundings and forearms him against many dangers and makes him less willing to assume the risks that he does with his present limited knowledge.

It does not appear to me that there is anything in the argument that the greater extent of mines today

should make such a difference in examination questions as would render unnecessary a knowledge of mine ventilation, mine gases and other old-time questions. These are always essential to a practical mining examination. The larger the mine, the more help is given the foreman, and he is better able to see that the mine is operated in compliance with the mining law, because he is not compelled to devote his time to the repair of machines or the surveying of the mine. This work is done for him by trained men employed for that purpose.

In closing let me say that my idea of an examination is that it should bring out a man's intelligence and show the extent of his mining knowledge generally, by the way in which the questions are answered. In my opinion this is, or should be, the aim of the examiners. Let me say to those who are preparing to take the examination next year, "Get busy boys and swallow all the books you can lay hands on, but do not neglect the practical side, as you will need both to secure a good position as mine foreman or fireboss."

Heilwood, Penn.

THOMAS HOGARTH.

Letter No. 5—I was glad to read the article of Alexander Waugh, secretary of the Mine Foremen's Examining Board for the 17th Bituminous District of Pennsylvania, *Coal Age*, Sept. 16, p. 461.

In his article, Mr. Waugh outlines a practical method of conducting an oral examination. In my opinion, this is a step in the right direction. We often hear it remarked that mining examinations are not sufficiently practical and that a practical test should be given each candidate that would enable him to show his knowledge under the same conditions with which he would be surrounded in daily practice.

I certainly believe that practical questions should be asked in every examination to prove a candidate's knowledge in respect to the problems he will meet every day in the mine. He should know the methods of extracting coal at a minimum cost under different conditions, and with the greatest degree of safety to the workmen employed. It is important to ascertain his knowledge, also, in regard to the preservation of life and property in the operation of a mine.

An examination should include questions on economical haulage, the building and maintenance of good roads, and the power that is best adapted to the conditions existing in and around a mine and under which it must be operated. A mine foreman should also know how to lay out the workings of a mine so as to obtain the best results in respect to drainage, haulage and ventilation. A good foreman must also be able to handle men successfully.

A MINE FOREMAN NEED NOT BE ELECTRICIAN OR MECHANICAL ENGINEER

While a mine foreman should possess a thorough working knowledge of the different kinds of machinery used in and about the mine, I cannot agree with the writer of *Letter No. 1*, *Coal Age*, Sept. 23, p. 513, in the opinion expressed that it would be decidedly more to the point that candidates in an examination be asked to explain what caused a mining machine to get out of order or under what conditions maximum results can be obtained in the operation of mine locomotives and coal cutters, than to be required to show their knowledge of mine ventilation and the chemistry of mine gases, together with the effect

of such gases on life and flame. The letter seems to betray the opinion of the writer that what is wanted in a mine is an electrician or mechanical engineer.

The ability to take care of and operate mining machines is a small part of a mine foreman's duties and responsibilities. It is more important that a prospective foreman should show his knowledge of the application of principles to the varying conditions of mining, with regard to economy and safety in operation, than to understand every detail of the machinery used in the mine. It is not the man who has studied the machine with a view to taking care of it or repairing it when out of order that is able always to get the best results in its use under different conditions.

Finally, in regard to the character of mining examinations, I believe that the wider the scope of the questions asked, including the application of theory to practice, the better results will be obtained in securing practical and successful mine officials.

E. E. F.

Six Mile Run, Penn.

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Improving the Coal Industry

Letter No. 6—Among the several letters submitted in regard to "Improving the Coal Industry," that of A. A. McDonald, Monongahela City, Penn., *Coal Age*, Sept. 23, p. 506, greatly interested me.

The suggestion that the enactment and enforcement of a national law regulating the minimum allowable percentage of recovery of coal would compel all companies to observe equal care and prove a hardship to none, appeals to me as being well worthy of consideration. The prevention of the awful waste that is so common in the mining of coal at the present time by any possible means would prove a great benefit not only to the coal industry but to the public at large.

Mr. McDonald states that, while some companies recover as high as 95 per cent. of the coal in their mines, other operators in the same region show a recovery as low as 63 per cent. I fail to understand why any coal company or operator should be contented to recover as low as 63 per cent. of the coal in the mine, although my own experience proves that such is a fact. I recall instances where 50 per cent. of the coal thus left in the mine could have been cut with either the longwall or the shortwall type of machine with absolute safety, and most of the coal still remaining could then have been recovered with the pick, making the average recovery in such mines about 85 or 90 per cent. of the coal in place.

There would, no doubt, be some extra expense in the first working, in order to obtain the best results. It might cost somewhat more for entry yardage, room turning, tracklaying, ventilation, drainage, etc., but the results obtained would certainly warrant these additional expenditures. I would like to hear mine managers, superintendents and foremen explain why they permit these wasteful methods to be followed in the operation of their mines.

The suggestion of T. A. Mitchell, Hardy, Ky., on the same page, is also worthy of consideration. Mr. Mitchell refers to the running of mining machines or other machinery by incompetent men and suggests an examination to prove the competency of men before they are given charge of machinery or employed in any capacity requiring mechanical knowledge and skill. I believe that a large part of the costs in machine mining is due

to inexperienced or ignorant men handling the machines. It frequently happens that foremen and mine electricians do not understand the proper handling of machines or other equipment in their charge.

Men are too often employed as machinists, motormen or machine runners on the strength of their claim that they have performed the same service before, and no attempt is made to test their claim by an examination of their capability to operate and care for the machinery of which they are to take charge. On assuming their duties they use their best judgment, no doubt, but the results depend on their ability and skill, and the lack of these is often the cause of much expense for repairs and the consequent delay is a loss in the production of coal. It is fortunate, indeed, if a serious accident is not recorded in the employment of such incompetent men.

There are a few suggestions that occur to me, which, though not new or original, may be useful to some who are not so familiar with the use and care of machines. They are the following:

Employ only a practical and experienced machine boss or electrician, who is thoroughly acquainted with the operation and repair of the machines in use. The foreman, or machine boss, should carefully inspect each machine daily and see that it is kept properly oiled, the bits set to gage and not too short so that the cutterbar will bind under the coal, neither too long so that they will strike the bottom or sides of the machine frame. Keep the cutterchain taut, but not too tight and not too loose. See that all bolts are tight, as a loose bolt may fall out and do serious damage to the machine. Insist on having the coal cut with sharp bits and see that the machine runners are well supplied with these and also good oil.

Wellsburg, W. Va.

DANIEL F. SMITH.

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Certification of Mine Foremen

Letter No. 8—I have been much interested in studying the possible effect of the new compensation law on certified mine foremen and ultimately on the general safety of the mines, and would like to say a few words along these lines.

While I believe in the compensation of injured workmen provided by the new law, I feel that the clause that permits the mine operator to employ uncertified men in that position will have an injurious effect in more ways than one. There are many operators and superintendents who are wholly incompetent to judge of the ability of men to perform the duties of mine foremen, because they have not had the mining experience themselves that would enable them to render such a capable judgment.

Only a short time ago, an instance of this came to my notice, when an operator turned down a first-grade mine foreman, because he thought he was a little high priced, and placed a man in charge of the mine that could not pass a foreman's examination, paying him by the day the same as a common laborer, believing that he was saving money thereby. He has since learned to his sorrow that the higher priced man would have been the cheaper one to employ. The operator to whom I refer does not know the first principles of coal mining, and I consider it an outrage that a man of his type has the authority under the law to employ a man as foreman that, in his estimation, is qualified to fill that position.

Prior to the passage of the new law, the capability of candidates for the position of mine foreman was judged by an examining board composed of men that had spent nearly all their lives in the mines and had served in nearly every capacity therein. The new law has rendered this standard of judgment of the capability of men for that position null and void. Moreover, the law has a decided tendency to decrease the number of efficient men who desire to be foremen. Its effect is to destroy the ambition of young men to qualify themselves for that position.

Only a short time ago, I was talking to some young men and asked them if they were going to take the coming examination. Without exception, they replied: "No, what is the use? A man does not need a certificate now to be a mine foreman, and we are not going to waste our time in studying for a position when more money can be made at almost any job around the mine requiring less work and worry."

Another effect of the law is to reduce the mine foreman's wages, as there are plenty of men ready to take a mine foreman's place for less money than he is receiving, simply in order to have the name of being a boss. The less a man knows, the lower the price he puts on his services. There are no doubt some men who do not hold a certificate and who are capable of managing a mine as well as many certified men, but this does not alter the fact that men are often employed as foremen who are wholly incompetent to fill that position, and generally an incompetent superintendent is responsible for his appointment.

FIREBOSSES KEEN TO OBSERVE DANGER

Personally, I believe that every mine foreman should have had several years' experience as a fireboss and assistant foreman, before he is capable of filling the higher position. A man may work in the mines for many years and yet not be as keen to observe existing dangers, as a man who has had a few years' experience as fireboss and learned to be constantly on the watch for dangerous conditions. If anyone doubts this statement, let him ask some miner who has worked for several years in the mines, in regard to some danger that he passed on his way into the mine that morning—as for example, a door that stood open, a loose piece of rock on the traveling road, or an unprotected trolley wire hanging low—and the chances are ten to one that he will say that he noticed nothing.

The practical test given to candidates in the examination at the Bruceton mine, as described in *Coal Age*, Sept. 16, p. 461, proves this fact. The candidates for mine foremen's certificates were there found to be much more observant of the dangerous conditions in that mine, than the candidates for fireboss certificates and assistant foremen. This was no doubt owing to their previous experience as firebosses and assistant foremen.

I want to say that it stands to reason that a man who has the technical as well as the practical knowledge of mining is better qualified to fill a position as foreman in a mine than the man of practical experience only. In my opinion the effect of the new law is to set coal mining back to where it was a good many years ago, in respect to the safety of mines.

I quite agree with a former correspondent who stated that the effect of the new law would be to knock out at least one-third of the certified foremen in Pennsylvania.

Companies will gradually employ uncertified men to fill the vacancies when certified men quit their places for some other position or occupation. This has occurred already in several instances, to my knowledge. I hope the question of certification of mine officials will be thoroughly discussed in *Coal Age* until some good is accomplished.

OLIVER YOUNG.

Nu-Mine, Penn.

Favors Unappreciated

Letter No. 1—The editorial entitled "Too Slow with Their Favors," *Coal Age*, Oct. 21, p. 680, suggested by the experience of General Manager Miller, of the Pittsburgh Mining Co., as given in his statement published on page 676 of the same issue, deals with one of the most puzzling subjects in the negotiations between employers and the miners' organization. If this difficulty was confined to sociological features, the situation would not be so serious; but, frequently, the opposition of the men to minor changes interferes with the economic operation of mines and often affects its safety. Laymen are not aware of the real situation, and coal operators are often unduly censured for not taking proper steps in the protection of property and the lives of their employees.

Last week *Coal Age* contained a review of the situation existing at the mine of the Vandalia Coal Co., in Indiana. The company had installed approved safety lamps that had been passed upon by the inspectors, and charged the miners for the use of the lamps an amount equal to what their expenses would be in maintaining the ordinary open lights. For some reason, as yet not satisfactorily explained, the miners objected to the use of the safety lamp, with the result that the mine had to be abandoned.

The difficulty now seems to be that the miners do not wish to use anything but open lights in removing the machinery from the mine, and the company feels that it is not safe to enter the mine without safety lamps. Evidently the whole question hinges on the change of a precedent, because there are many mines all over the world that use safety lamps exclusively. Changes in working methods that in no way affect the earnings or the labor of the miners are often thus opposed without the assignment of any reason, as none can well be given.

Recently, a mine in Kansas endeavored to work on the panel system, because a better recovery of coal could be obtained and a smaller number of entries would have to be kept up; but the attempt had to be abandoned, because the miners would not work under the system. In another mine it was proposed to change the road from the center to the rib of the room. At the same time the width of the rooms was to be changed so that the distance from the track center to the far rib would be no greater than it was when the road was in the center of the room. But this method could not be adopted, notwithstanding the fact that the change would have enabled the miners to draw the pillars and make better wages while otherwise the pillars remain and are irretrievably lost.

The question may well be asked, What causes this haggling attitude of the miners? Is it the desire of the average miner to assume such an attitude, or is it the work of the overzealous official who desires to make a record for himself, fearing otherwise to lose his job.

Chicago, Ill.

CARL SCHOLZ.

Inquiries of General Interest

Reward of Long Service

There is a problem connected with the coal industry that has proved a difficult one in the career of many an able and faithful employee of a large corporation. I would like to describe the situation by assuming a case that illustrates clearly the condition in which more than one good man has found himself placed after years of faithful service in the company's employ.

We will assume that the Fair Oaks Fuel Corporation is operating several mines located at different places, and it so happens that the superintendent of the plant at Dunbar has a position open for some man who possesses more than the average ability and capacity for handling men and getting results. After a careful canvass, he finds no one at the Dunbar plant whom he considers as being capable of filling the place. A consultation with the manager reveals the fact that there is an able and trusted man in charge of the Cedar plant, 100 mi. away, which is operated by the same company.

The man in question, whom we will call "Dave," proved by his long and faithful service that he is capable of filling the position. A few days later, Dave is notified that he will be transferred from the Cedar plant to the Dunbar plant, to take charge of an important development, and although well satisfied in his old place at Cedar, he accepts the proposition and moves to Dunbar, taking his family with him. Dave's ability and experience enable him to fill the new position with entire satisfaction to the company and credit to himself. By his energy, the particular work of which he has charge is completed in less than the allotted time.

Once more the man is notified that it will be necessary to give him a temporary place elsewhere, until the Dunbar proposition can be reorganized when it is expected that he will be given a good position at that plant. This time Dave is shifted to a less congenial place. The position is not one such as he would choose or warranted by his ability and experience. As a reasonable man, however, he willingly recognizes the exigencies of the case and accepts, temporarily, the lower position.

Time wears on with little prospect of a change in his favor; and, although Dave accepted the last transfer with his usual grace and willingness, he has begun to wonder whether the time has not come for him to urge his own right to recognition when he finds that another man has been offered the position that he had been led to expect would be given to him when the organization was completed. The new man, it was plain to see, had not the same capacity for work, nor were his habits such as to recommend him for the place, which he had evidently secured through some connection in the management.

In answer to an inquiry, it was explained to Dave that the position he now holds will eventually be a better position than the one that he had expected to obtain in the Dunbar plant. However, no one can blame Dave for reasoning that when that time comes, and his present

position has become one of value and prominence, some one else will be found to fill the place.

Dave, at present, is the oldest man in continuous service of the company and, from his viewpoint, he is inclined to think that his service is not meeting with the reward it merits from the management. As a result, he is very seriously considering a change that will take him out from the employ of the company he has served for so many years.

I would like to ask the practical readers of *Coal Age* the following question: If you were placed in Dave's position and had his ability and experience, what would you do under the circumstances I have described? Would you stay with the old company and run your chances with the other men, or would you go elsewhere and take a chance with another company?

DEE.

Allport, Penn.

This is certainly a good practical question for *Coal Age* readers to answer, and we leave this inquiry in their hands, hoping for its thorough discussion. As has been remarked, the circumstances described are of common occurrence in the ever varying developments of the coal industry, in every branch of the work. Let us have the experiences of men who have passed through the mill.

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Electricity and Brittle Rails

One frequently hears the remark made around the mines that the return electric current has a hardening or crystallizing effect on the rails when these are used to convey the current back to the generator at the power plant. It is claimed that when a rail return is employed, the rails become so brittle that they are often broken when an attempt is made to bend them to fit a curve, or to straighten a curved rail. If this is a fact, it would be interesting to know the reason for this brittleness. Also, kindly give the coefficient of friction of manganese steel on ordinary steel rails.

MIXING ENGINEER.

Scranton, Penn.

As stated in the reply to an inquiry in regard to annealing brittle rails, *Coal Age*, Oct. 7, p. 613, the brittleness of the rails is not caused by the electric current, but is due to a crystallization taking place in the iron, owing to the constant pounding of the wheels on the rails. The electric current would rather have a tendency to overcome the effects of crystallization and render the rails less brittle through a possible magnetization of the metal. Brittle rails should be heated and allowed to cool before any attempt is made to bend or straighten them.

We have no information in regard to the exact coefficient of sliding friction of manganese steel on ordinary steel rails. However, this cannot greatly differ from the coefficient commonly given for steel on steel, which is 0.242, making the friction developed slightly less than one-quarter of the normal pressure.

Examination Questions

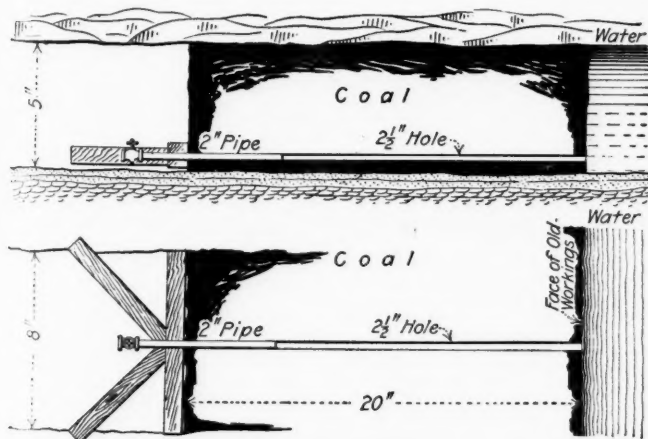
British Columbia Examination, First Class, May 30, 1916

(Questions Answered by Request)

Ques.—If the workings in a seam of coal 5 ft. in thickness approached an extensive waste containing water with a head of 60 yd., describe and show by sketches how you would tap the water and make the necessary arrangements for its inflow not to exceed the capacity of the pumps.

Ans.—The pressure corresponding to a head of 60 yd., or 180 ft., is $180 \times 0.434 = 78.12$ lb. per sq.in., or $5\frac{5}{8}$ tons per sq.ft. The total pressure on the coal at the face of a heading 8 ft. wide by 5 ft. high would then be $5 \times 8 \times 5\frac{5}{8} = 225$ tons. It is not possible, however, to calculate the thickness of a coal barrier to withstand this pressure. While the bituminous-mine law of Pennsylvania requires a thickness of barrier pillar equal to 1 ft. for each $1\frac{1}{4}$ ft. head, anthracite practice has adopted the rule of multiplying the thickness of the seam in feet by 1 per cent. of the head plus 5, which gives, in this case, $5(0.01 \times 180 + 5) = 34$ ft. These rules, however, apply only to a considerable extent of barrier pillar. Where a single heading is approaching old workings, the Pennsylvania law requires that the width of the heading shall not exceed 10 ft. and that one or more drillholes be kept 12 ft. in advance of the face.

As shown in the accompanying sketch, for the purpose of tapping the water from abandoned workings, under



ELEVATION AND PLAN SHOWING PIPE TO TAP WATER

a head of 180 ft., it would be well to keep a 20-ft. hole in advance of the face of the heading so as to provide for this thickness of pillar. When the water is struck, a wooden plug should be driven in the mouth of the hole to stop the flow until a pipe can be inserted and made fast by bracing it with a timber frame, as shown in the sketch. The pipe is provided with a good valve by which the flow of water can be controlled, as desired.

Ques.—A certain thick seam of coal is very liable to spontaneous combustion. How would you work it?

Ans.—In the absence of further data, this question can only be answered in a general way. Every effort must be made to extract the coal in a manner that will prevent a squeeze or creep extending over the workings, crushing the coal and making its complete extraction practically impossible. In that case the coal abandoned in the waste would cause trouble by its spontaneous ignition. Also, in the working of seams liable to spontaneous combustion, care must be taken to load out all the fine coal and slack, instead of allowing this to be stored in the waste. The workings must be thoroughly ventilated, and places that have been worked out and abandoned should either be ventilated and inspected carefully at regular intervals or sealed by air-tight stoppings.

The method of working a thick seam of coal, under these conditions, can only be determined from an intimate knowledge of the character of the coal, the thickness and inclination of the seam, the nature of the overlying and underlying strata, depth of cover, presence of gas, water and fault lines in the formation. The seam may have to be worked in two or more benches, the nature of which will determine the order of their extraction. It may be necessary to adopt the panel system of mining or to work the coal longwall, according to the prevailing conditions in the seam and the adjacent strata. At times it might be best to employ the pillar-and-stall method of working, which consists in driving narrow stalls up a distance of 75 or 100 yd. and working back the wide pillars separating the stalls, each as a single breast on the retreating plan. The conditions alone will determine which of these systems is preferable.

Ques.—(a) What do you consider should be the factor of safety for haulage and winding ropes? (b) What size round steel-wire rope for winding would you use for a load of 6 tons? (c) What are your views as to recapping the rope and the length of time a rope should be used?

Ans.—(a) In hoisting practice it has been customary to use a factor of safety varying from 5 to 10, depending on the depth and character of the hoist, when determining the size of hoisting rope to be used. Under ordinary conditions, and for depths not exceeding 100 yd., a factor of safety of 5 is commonly used. For haulage on steep slopes more than 100 yd. in length, a greater factor should be used, owing to the increased wear of the rope and the greater damage that would result from its breaking.

(b) For a total safe working load of 6 tons including friction and using a factor of safety of 5, the diameter of a cast-steel, 6-strand, 19-wire hoisting rope should be $d = \sqrt{5 \times \frac{6}{30}} = 0.877$, say $\frac{7}{8}$ in.

(c) Hoisting ropes should be recapped at regular intervals, varying from 3 to 6 months, depending on the conditions of use. All ropes should be inspected carefully each day. The life of a rope will be determined by such thorough inspection and the conditions under which it is used, especially the corrosive action of the mine water.

Coal and Coke News

Washington, D. C.

Hearings in what are known as the Lake Cargo Coal Rate cases were continued throughout last week before the Interstate Commerce Commission, which is attempting to gather the facts upon which to determine the relative rates from the various coal fields in Ohio, Pennsylvania and West Virginia to the Lake ports. The hearings were held before Commissioner Clements and Examiner Marshall of the Commission.

One of the first events of the hearings was the admission as evidence of all the contracts between the Norfolk & Western and a coal company in the Pocahontas district, the bonds of which it has guaranteed and on which it has paid hundreds of thousands of dollars as interest, the contracts between that carrier and the Pennsylvania R.R., on the one hand, and the guaranteeing of the contracts between the Norfolk & Western and the coal company, and the contract of the Pittsburgh Coal Co. with the United States Steel Corporation.

These contracts were called for by Francis B. James, who represents some of the West Virginia coal operators. Commissioner Clements ruled upon the admissibility of the evidence. It is understood that the object in introducing the contract between the Pittsburgh Coal Co. and the steel company was to show that if the coal company has not been increasing its business as rapidly as its West Virginia competitors, there is some reason for it other than the rail rates. The purpose in having the contracts between the railroad companies and the Pocahontas district company put into the record was to show the interest the carriers have in that field other than that of carriers.

Most of the arguments were confined to objections made by the carriers to exhibits offered by Z. T. Vinson, attorney for one section of the West Virginia operators, showing their cost of production. The object in showing the cost of production was to prove to the Commission that much of the Lake cargo coal is not sold by the West Virginia operators at or below the cost of producing it, so as to enable them to keep their mines producing coal upon which they can obtain a profit. It was also intended to show that any advance in rates means the elimination of West Virginia mines from the Lake cargo-coal market. Mr. Vinson said he proposed to show that the Pennsylvania and Ohio operators, who are trying to have the differential of 25c. increased to 40c., are losing their competitive place, not because the differential is no greater than 25c., but because the West Virginia mine labor is more efficient than that in Ohio and Pennsylvania.

"A West Virginia miner produces 1,000 tons of coal while the Ohio miner produces a little more than 700 tons," said Mr. Vinson. "The inefficiency of the Ohio and Pennsylvania miners more than accounts for the advantage the Ohio and Pennsylvania operators say we have over them. I do not want to go into the question of the relative efficiency of the union and non-union miner. The facts I am stating are taken from the reports of the Geological Survey and those figures should be taken as prima facie."

The admissibility of the testimony offered by Mr. Vinson was attacked by E. J. McVann, who said he and his associates had deduced from the reports of the Commission in other cases that such testimony could not be admitted. Others who attacked the testimony were C. M. Johnson, Frank Lyon and T. S. Hogsett, representing shippers other than those represented by Mr. Vinson and R. Walton Moore and W. S. Bronson for the carriers. Mr. Moore said it would be a wide door that would be opened if the testimony should be brought in. Commissioner Clements took the objections under consideration and ruled in substance as follows:

1. Figures showing the cost of producing coal in West Virginia or any other field are not directly relevant to the question as to what would be a reasonable rate on Lake cargo or commercial coal.

2. The railroads must furnish figures showing the cost of the service they render in carrying coal to be transhipped by the Great Lakes or in taking it to destinations in Central Freight Association territory, where it is used for both domestic and steam fuel.

3. Exhibits showing labor efficiency in the various fields would not be relevant except possibly in rebuttal to testimony offered by the railroads showing a large movement of coal from one district and a comparatively small one in another, due, as they might maintain, to a maladjustment of rates.

Attorney James asked the railroads to produce statistics as to cost. He inquired of Mr. Bronson,

who had charge of the case for the carriers, whether the statistics had been prepared. Mr. Bronson said they had not because the carriers did not deem them such as should be furnished by the carriers. Commissioner Clements at the end of a considerable colloquy asked Mr. Bronson upon what the Commission would base its decision if the carriers asking permission to advance rates had not furnished any facts showing the necessity for advances. One of the facts, it was suggested, would be figures showing how much it costs the railroads to perform the service.

Arthur Hale, as a witness for the Fairmount coal operators, offered what the attorneys and witnesses in the case called "canned" testimony. He placed in the record a series of questions and answers and swore that that is what he would say in answer to questions that would be propounded to him by his attorney if he were to remain on the stand for the time necessary for the lawyer to ask the questions and for him to answer them. He furnished copies of the questions and answers so that all concerned may study them at leisure and then conduct their cross-examination at some future day. Other witnesses who testified were Frank B. Davis, the statistician for the Ohio Coal Traffic Association; Examiner W. V. King, who identified exhibits placed in the record in the Commission's inquiry in the ore-rate case; W. J. McGee, a salesman of Lake cargo coal, and Frank Collins, representing the Island Creek Sales Co. E. E. Williamson testified as to the history of Lake cargo coal rates.

HARRISBURG, PENN.

In an opinion to the State Bureau of Statistics of the Department of Labor and Industry, Deputy Attorney General Kuhn holds that an amount of money adjudged to be due as compensation for injury can be considered as part of an estate. The question arose in the case of a Somerset County miner who died the day after an agreement had been made by the State Insurance Fund to pay him a lump sum as compensation for an injury received while working for a coal company several months before. The compensation was paid after the man's death. It is held that the agreement established the relation of debtor and creditor, and the amount paid could have been disposed of by will. Therefore the compensation is payable to legal representatives or heirs of the deceased and the question of an escheat is held not to be pertinent.

Closer Supervision Is Secured

A new plan whereby closer supervision of the mines is obtained, together with added safety, is being introduced in the collieries of the Delaware, Lackawanna & Western Railroad Co. in the anthracite region. The system has been put into effect at the Woodward colliery at Kingston and at a number of mines in the vicinity of Scranton.

Heretofore, under this big company, firebosses and patrolmen have been patrolling practically the same beats in all of the mines. By the new plan, the mine is marked off into sections, and one fireboss or section foreman is placed in charge. This means closer supervision, and also added safety for the reason that one man has only one section to look after and he can do this work much more efficiently than heretofore.

Under the old system, which is still in use in several of the company's collieries, but which will soon give way to the more modern plan, firebosses came to work at 3:30 o'clock in the morning, getting through their inspection at about 6:30 o'clock.

Now the section foreman need not get on the job until 6 o'clock, and remains at his work for one shift. In this way there is always a foreman on the job. Owing to the elimination of the old position of patrolmen, many of these men have gone back to mining, obtaining positions with the company. The firebosses in almost every instance were given the preference in the appointments for section foremen.

The sections in the mine, which a foreman is to oversee, are being made uniform in size, so that one foreman will not have to do more work than another. Closer supervision of the work and added safety are said to be the reasons for the change.

Suit Should be Brought in Pennsylvania

The lower courts have granted a temporary injunction to the Pennsylvania Coal Co., restraining Steve Bires, of Throop, from making any further moves in his suit against the coal company, which is before the Supreme Court of the State of New York. The bill will come up for hearing on Nov. 11.

In the bill, the company alleges that Bires, who was injured in the mine of the company in

March, 1915, brought suit to recover damages in September, 1916, in the New York State Supreme Court. The company further alleges that Bires is a resident of Throop and that the case should be tried in Lackawanna County. The bill sets forth that the company is required to make answer to this suit, and that as yet Bires has not filed a statement of his injuries, also that the company will be put to considerable expense in being forced to fight the suit in New York state.

PENNSYLVANIA

Anthracite

Edwardsville—A number of changes are being made in the executive force of the Woodward colliery, of the Delaware, Lackawanna & Western Railroad Co. and some of the men are being transferred to other workings, while the large storehouse near the breaker will be utilized for a power house, generators being installed to furnish light and power for that vicinity.

Drifton—Entombed by a fall of rock in the operations of the Lehigh Valley Coal Co., John Oyster and Dominick Ferdinand, miners, dug their way to safety within two hours on Oct. 23. They met rescuers working to reach them.

Wanamine—The Lehigh & Wilkes-Barre Coal Co. has made extensive repairs to its colliery No. 18, and the people of the vicinity can boast of having one of the most up-to-date collieries in the anthracite region. All the old buildings, together with the breaker, have been razed and in their place brick, concrete and steel buildings have been erected. All the buildings of the colliery are fireproof.

Port Clinton—The boating season on the Schuylkill Canal, opening this year in October instead of April, because of the culm-choked channels and flood damages, will continue until the canal freezes up, instead of ending on Nov. 1. Hundreds of tons of coal are being loaded here every day for canal shipment to Tidewater at Philadelphia. Repairs and other work on the canal this year cost \$20,000.

Bituminous

Pittsburgh—Bituminous coal reached \$4.25 a ton at the mines on Oct. 23, \$2.65 a ton higher than the customary price, and probably the highest it ever commanded up to that time. Sales agents of some of the more important companies say there is little coal available, even at this price, as the mines generally operate on contracts which they are now finding difficulty in filling, owing to the car shortage. The railroads, it is said, can furnish no more than a four hours' supply of cars, while manufacturing plants are operating full time, and in some instances were working 24 hr. per day. Some plants already have been compelled to close down because of fuel shortage, but the larger companies have, up to the present, been able to operate.

Somerset—Suit has been filed by heirs of the late Isaac Ripple, asking \$20,000 damages from the John Lochrie Coal Co. for triple value of the coal alleged to have been taken illegally from beneath the Ripple properties and for damages alleged to have been caused through subsidence and otherwise. It is charged that in addition to taking out coal without payment and causing surface subsidence the defendant cut through the coal of the plaintiff into an abandoned private mine on the Ripple estate, thereby draining the Lochrie workings through the Ripple property and fouling a stream so as to make it unfit for agricultural use.

Marianna—The entire holdings of the United Coal and Coke Co. in this vicinity have been sold to the Midvale Steel and Ordnance Co., it has been announced. The purchase price is not stated, but it was understood to have been about \$4,000,000. The holdings include 5,200 acres of coal land, also three shafts, two of which have been idle for some time, but operations will be resumed within a few weeks. It is understood that the steel company intends to use the output of the mine for its own plant. Many improvements will be made, and 85 of the 160 coke ovens which have been shut down for some time will be blown in.

Cassandra—J. Blair Kennerly, of Philadelphia, who has recently purchased a number of mines in western Pennsylvania, has closed a deal for the William Leap mine here. The consideration is in the neighborhood of \$50,000.

Uniontown—A deal was recently closed whereby the H. C. Frick Coke Co. obtained the right-of-way across the farm of John A. Guiler, at Morrell, for the construction of a concrete drainage ditch to carry water which now seeps into old workings.

and eventually finds its way into the Lelsenberg mine. The idea is to build a long concrete trench to take care of surface drainage after heavy rains. Under present conditions this water finally finds its way into the Lelsenberg mine, and after a heavy rain the pumps have a hard time to keep the mine from being flooded.

Brownsville—The Fredericktown Coal and Coke Co. is making improvements at its plant, which will cost approximately \$10,000. These include extending the railroad tippie a distance of 200 ft. to the river. When this work is completed the company will be able to ship coal either by rail or water. A scarcity of labor makes the completion of the work uncertain. Contractors are paying high wages, but are unable to hold men.

Officials of the Diamond Coal and Coke Co. in a conference recently held, decided to resume operations at the Diamond mine, which was recently destroyed by fire as soon as the necessary reconstruction work can be completed. The various structures that were burned, including the railroad and river tipples, boiler house, engine house and electric plant will be rebuilt, and work of clearing away the debris was started immediately. In addition to the various structures described, entailing a loss of approximately \$25,000, five coal barges with 45,000 bu. of coal, 85 mine cars, 50,000 ties and 50,000 posts, three dynamos, three boilers and several barrels of oil stored in the electric plant were consumed.

Johnstown—The operators in the Somerset County field recently announced a wage increase affecting all miners and day laborers. The increase for labor amounts to 25c. per day and that for mining 7c. per ton. The rate for pick mining is thus made 65c.

Charleroi—Plans are gradually being evolved for the opening of the Warner-Leonard coal tract located chiefly at what is known as the Melenzyer place, on the road between Charleroi and Bentleyville. The first operation will probably be at the old Maxwell mine across Maple Creek from Lincoln Avenue extension.

WEST VIRGINIA

Charleston—Twenty-six persons were killed in mine accidents in the State of West Virginia during the month of September, 1916. Of this number 15 were Americans and 11 foreigners. Twenty-three of the 26 were killed inside the coal mines and three outside. McDowell County headed the list with a total of 8 miners killed. Other counties were as follows: Fayette, 4; Raleigh, 4; Marion, 1; Clay, 2; Mingo, 1; Kanawha, 1; Preston, 1; Putnam, 1; Brooke, 1; Mercer, 1; and Taylor, 1. The majority of accidents resulted from falls of roof and coal, while mine cars came next, being responsible for the death of 6 men.

The Dry Branch Coal Co. recently filed a complaint with the Public Service Commission, seeking to have the Chesapeake & Ohio R.R. Co. prohibited from constructing a switch from a new branch line of the road up Wet Branch to Cabin Creek, to intersect with the main line at a point directly in front of the tippie of the Dry Branch Coal Co. It is claimed that such an intersection would create dangerous conditions for the men working about the tippie.

West Virginia coal operators have been informed that the loss of Italian miners is due to advices to these men from Italian Consuls to work with companies manufacturing munitions for the Entente Allies. A great many Italians have left West Virginia during the past few weeks, and but few took occasion to explain the reason for their departure.

It is stated that the mining towns along Cabin Creek and Coal River, which were devastated by the flood of Aug. 9, are gradually returning to their normal activity. The dwelling houses and business blocks that were wrecked by the flood are rapidly being replaced by new and modern buildings. Some of the towns along the creek will have more dwelling houses than they had before the flood. This is taken as an indication that the coal companies will employ more men than formerly.

MARYLAND

Cumberland—The coal miners of the Georges Creek region were recently granted a voluntary increase of 7c. per ton. The new rate will be 75c. Laborers were granted an increase of 25c. per day.

ALABAMA

Sessemmer—Slope No. 1 of the Tennessee Coal, Iron and Railroad Co., at Readers, was recently closed for work. Work was also started on the timenting of Slope No. 6, which has been closed for these repairs. The men who have been working on Slope No. 6 have been transferred to No. 1. The depth of No. 6 Slope is about 2,400 ft. and it is not known whether the slope will be lined for the entire length or not. All mines at Readers are working a large force of men on full time.

Birmingham—Ten white men and six negroes lost their lives in the mines of the Roden Coal Co. in Bibb County on Oct. 22, as the result of a gas explosion. Nine of the white men were killed by the explosion and the tenth was a member of the rescue party and was overcome by the gas fumes and fell from a ladder, breaking his neck. At the time of the explosion the men were engaged in the installation of electrical equipment in the mine, and out of a total of 17, one white

man escaped, but was seriously burned. The list of white men included the master mechanic, chief electrician and boss driver. The explosion was so severe that it cracked the concrete retaining walls at the mine entrance and completely destroyed the ventilating system inside the mine.

KENTUCKY

Hazard—Perhaps no field in eastern Kentucky is now running every day in the week except the Perry County field around this city. As a result operators have only cut night shifts, with the day work going on uninterruptedly.

Fleming—The Elk Horn Mining Corporation in its Fleming, Haymond and Hemphill plants, averages from one to two days a week idle because of the shortage of cars. Smaller operations in the Boone's Fork field are averaging generally two days a week. Railroads, however, promise an improvement over present conditions.

OHIO

Dixie—The Upson Coal and Mining Co. has erected a club-house for its miners, placing it at their disposal under the control of a committee of five, who will serve as a governing board.

McArthur—Interests connected with the Central West Coal Co., of Columbus, Ohio, are said to have organized a new company, with a capital stock of \$50,000, to take over and operate a mine near Starr, Ohio.

West Point—The Kirk-Dunn Coal Co. recently let contracts for the construction of upwards of 25 new 4- and 5-room cottages that it hopes to have ready for occupancy before snow flies. More than that the village is to have electric lighting furnished by the Youghiogheny & Ohio Coal Co.

Columbus—The car shortage in Ohio and adjoining states has reached such a point as to cause two separate official investigations. The first investigation has been started by the Ohio Utilities Commission and is under the direct charge of L. K. Langdon. The announcement was made that the entire force of inspectors, seven in all, aided by experts will have charge of the commission's investigation. They will be sent through the state to discover whether empty cars are idle on sidings as is charged by some coal operators. Secretary Armstrong of the Commission announced that that body had been investigating quietly for some time and conditions so far had not warranted action by the Commission. Ohio operators and railroad officials will also participate in the investigation of the Interstate Commerce Commission which will be held at Louisville, covering the Middle West. This investigation is scheduled to start Nov. 3, under Commissioner C. C. McChord. The shortage has brought to the Interstate Commerce Commission a deluge of complaints from shippers in every line, but more especially coal.

Bellaire—Local coal mines are losing more time than usual because of the car shortage. The rail and river mine No. 1 was recently idle two consecutive days. For this reason a number of the mines in this vicinity are losing two or three days per week.

INDIANA

Clinton—Some of the mines of the Miami and Jacksonville Coal Co. at Clinton were recently closed because the companies operating them failed to retain dues from the wages of the mine employees for the benefit of miners who struck at Dugger, Ind. The company agreed to make the checkoff at the next payday.

ILLINOIS

Peoria—A Chicago corporation, the name of which is withheld, has secured an option on all the coal underlying the Tripp farm in East Peoria. Engineers have started work on this property preparatory to establishing a new colliery. The new plant, if the option is closed, will be in the Coal Creek Valley, accessible by both Lake Erie and Peoria & Pekin Union Ry. The concern is said to be contemplating a plant capable of producing 2,000 tons per day.

Witt—It is announced that the old mine here, known as No. 14, which has been closed for three years and in the hands of a receiver, will be reopened soon if Theo. C. Keller, of Chicago, the receiver, succeeds in contracting with the Big Four R.R. for 33 carloads of coal a day from the two Witt mines. A petition was recently circulated in Witt and Hillsboro for subscriptions to aid in putting the mine in shape for reopening, but nothing came of it then. Inspection of the mine has shown that it is in better condition than was supposed.

Pekin—The annual report of Charles Martin, county mine inspector for Tazewell County, shows that the total production of coal was 310,082 tons, a decrease of 13,550 tons from the previous year, when 323,632 tons were mined. There are 475 men employed underground. Two new mines were opened at East Peoria. The mine of the Pekin Coal Co. was abandoned. There were no fatal accidents during the year.

Carlinville—Testimony given by certain miners in a damage suit of Valerian Simpkins against the Superior Coal Co. is being transcribed at the

request of officers of the miners union who are making an investigation to find out if any of the miners perjured themselves in their testimony. Simpkins obtained a verdict of \$5,250 for alleged injuries.

Springfield—Studies made by the Illinois State Geological Survey, in cooperation with the U. S. Bureau of Mines and the department of mining engineering of the University of Illinois, indicate that in Franklin, Williamson and Jefferson Counties alone there was originally 8,732,000,000 tons of coal, of which only 206,000,000 tons, or 2.35 per cent., has been mined. The amount of coal represented by 8,000,000,000 tons, it is pointed out, is equivalent to the total production of the United States to the end of 1910. At the present rate of production and with the present proportion of recovery, this volume of coal would supply Illinois for about 80 years. It is not thought that there is nearly as much coal available in the other beds as in the counties named.

NORTH DAKOTA

Wilton—That the lignite mines in this section and western North Dakota generally will be called upon to furnish a greater quantity of fuel than ever before because of the recognized possibility of a coal shortage, is the belief of mine owners here. Already large orders have been placed, and the force of miners is being rapidly increased to meet the constantly growing demand for fuel. The fact that the head-of-the-lakes coal supply appears low, gives rise to the belief that the lignite industry will see a real boom shortly.

TEXAS

Gainesville—A bed of lignite, 6 ft. in thickness and of unknown area, has been discovered on Blocker Creek, in Cooke County, about 12 mi. southwest of Gainesville. The discovery was made by some oil men prospecting in that section. A company is being organized here for the purpose of developing the deposit.

Austin—At a meeting of the state mining board held here recently a committee consisting of A. S. Master, of Thurber, William Wimberly, of Newcastle and W. K. Gordon, of Thurber, was appointed to frame bills desired by the coal miners of Texas for introduction at the forthcoming session of the Texas legislature. State Mine Inspector B. S. Gentry made his semiannual report, showing 18 bituminous coal mines and 32 lignite mines in operation in this state. Five new lignite mines were opened during the period covered by the report, two in Wood County and one each in Bastrop, Hopkins and Milam counties. No new bituminous mines were opened, but two bituminous mines that had been in operation were closed. Three lignite mines were also closed during this time.

WASHINGTON

Cle Elum—The Independent Coal and Coke Co. has just shipped its first car of coal. Charles E. Jones is manager. A rock slope 700 ft. long has been completed and equipped with a single track tramway. The cars will be operated by steam. Five grades of coal are made in addition to the regular mine run. The coal is of high grade and the mine has a capacity of 1,000 tons per day.

Snoqualmie—The crew of the King Coal Co. has just been increased by a force of 150 men and more are being added marking increased development at this property.

Personals

George Watkin Evans has returned to his Seattle office from a two-months' trip to Alaska.

J. E. Anderson has been appointed supervising inspector for the Associated Companies, which position he will hold in addition to representing the Associated Companies as senior inspector in the Middle West.

L. H. DeVore, of Bellaire, Ohio, formerly deputy state mine inspector for that district, has been made superintendent of the Pipe Creek mine of the Johnson Coal Co. He has already taken up his new duties.

John J. McCarthy, former employee of the H. C. Frick Coke Co., has been made general manager of the Buckhannon River Coal Co. with headquarters at Adrian, W. Va. All of the company's operations are located in the Buckhannon district on the Coal and Coke Ry., and comprise about 5,600 acres of coal.

R. J. Montgomery, general sales agent of the Philadelphia & Reading Coal and Iron Co., was elected a vice-president of the company, as was W. G. Brown, formerly secretary, on Oct. 26. Mr. Montgomery has been connected with the Coal and Iron company 36 years. Mr. Brown has been a nominal vice-president of the Coal and Iron company for several years. All appointments made on the date mentioned took effect immediately.

Obituary

Henry P. Snyder, publisher of the Connellsville "Courier," and widely known throughout the country as a statistician of the coke industry,

died recently after an illness of several years. Mr. Snyder was 50 years old at the time of his death.

Edward W. Morgan, aged 41, of Scranton, Penn., was recently killed by a coal train in the Keyser Valley yards of the Delaware, Lackawanna & Western R.R. At the time of his death he was on his way to Storrs No. 3 mine, in North Scranton, where he was employed as fireboss.

John Henry Schreiber, 71 years old, for 30 years president of the Springfield Co-Operative Coal Co., Springfield, Ill., died recently at St. John's Hospital in that city from injuries received a short time before at the company's mine. He was feeding a conveyor at the top of the shaft. He missed his step and was caught in the flight of the conveyor, which crushed his left leg and threw him insensible to the ground. Mr. Schreiber was born in Germany and came to this country in 1868. Two years later he moved to Springfield and lived there ever since. He had been associated with the company since its shaft was sunk in 1875.

Industrial News

Louisville, Ky.—The Woolridge-Jellco Coal Co. of Louisville has decreased its capital from \$300,000 to \$60,000.

Wheeling, W. Va.—The Pennsylvania R.R. has announced that it will build a spur 12 mi. in length northwest of Wheeling, which will tap a rich manufacturing and coal-producing territory.

Philadelphia, Penn.—In order to accommodate an increased output, the Hirsch Electric Mine Lamp Co. has moved to enlarged quarters in the Wright Building at 2535-2545 Broad St., Philadelphia.

Easton, Penn.—A local chemical plant it is said is receiving large quantities of coal dirt from the Hazleton region, being principally that portion of the earth immediately overlying the coal beds and is using it in the manufacture of a base for paint.

Columbus, Ohio—The big advance in the price of coal has made it necessary to stop operations at the state brick plant at Junction City, Ohio. The plant is operated by means of convict labor and its product consists mostly of paving blocks.

Curtisville, Penn.—A new coal company is being organized, the members of the firm being Gus Wolf, Jr., James Edmiston and A. H. Anderson. This company has leased 50 acres of coal land near Kerrmoor, near the New York Central R.R.

Pittsburgh, Penn.—It was officially announced recently that the readjustment plan of the Pittsburgh Coal Co. has been a success, and has now been formally declared operative. New stock will probably be ready for issue to the stockholders within 60 days.

Coalport, Penn.—Announcement was made on Oct. 26 that the Emmons Coal Co. has largely increased its interests by the purchase of the small mine, known as the Oakland. The new acquisition, it is announced, will largely increase the output of the company.

Shenandoah, Penn.—The Philadelphia & Reading Coal and Iron Co. is taking a census of all mine cars at the colliery. When this is completed many new cars will be built, so that the miners can have all the cars they need. This is done in order to increase the coal production.

St. Louis, Mo.—M. J. Ferguson, mining engineer of the Central Coal and Coke Co., of Topeka, Kan., announces that \$30,000 worth of machinery has been purchased to develop coal deposits on the Swift property near Paris, Mo. A spur is to be built from the Missouri, Kansas & Texas line to the property.

Pittsburgh, Penn.—The Randolph-Means Co. has undertaken the electrification of the mines of the Virginia-Buffalo Coal Co., the Amherst Coal Co. and the Lundaale Coal Co. in the Logan coal field of West Virginia. All of the above companies will use central-station power and the most modern equipment will be installed throughout.

Charleston, W. Va.—More than 490,000 tons of coal were shipped by the Virginia Railway Co. during the month of August, and 445,000 tons during July. The statement given out also shows that the Norfolk & Western Ry. handled about 3,000,000 tons of coal during the month of July and 116,065 tons of coke.

Mobile, Ala.—The Louisville & Nashville R.R. has begun to assemble material for the rebuilding of its coal docks on the east side of the Mobile River. Piling is being driven, and the work will be pushed for the winter season. The docks will be equipped with electric hoists and other appliances of a modern type.

Toledo, Ohio—For the first time since coal mining was started in central Illinois, mine owners say that hundreds of cars of coal are being shipped from that district to Toledo and other Ohio points to relieve what operators here declare is a coal famine in the Ohio field. Springfield coal is generally sent to Chicago and North-corn points.

Comfort, W. Va.—Harry P. Jones & Sons Co., recently closed a lease for 1,104 acres of coal

land on Big Coal River, near Seth, W. Va. Work on side tracks, mine openings, tipples, houses, store and club house was immediately started, and many houses are now completed and more are under construction, while coal is already being shipped.

Nesquehoning, Penn.—The plans of the Lehigh Coal and Navigation Co. to erect 250 houses for the men working on stripping operations near Flickersville, Penn., have been temporarily postponed, owing to objections made by the owners of the land. The company is looking for a new site upon which a village for 900 inhabitants will be erected.

Columbus, Ohio—As an example of the extent to which some shippers have been driven in securing steam stocks, the announcement is made that two slack piles, owned by the Sunday Creek Coal Co., some parts of which are 30 years old, have been sold recently for shipment as steam fuel. The two piles contain approximately 100,000 tons each.

Louisville, Ky.—A total of about 20 barges of coal have been received recently at Louisville from West Virginia points, by dealers here, enough to help out to some extent but not enough to affect the retail price, especially since the river is falling again at points from Louisville up. One tow of 40 barges and several coal boats grounded at Portsmouth.

Reading, Penn.—The anthracite trade of the Reading R.R. is booming, and an average of 1,600 cars are now being loaded at the mines daily except Sunday. The mild weather which has prevailed thus far has favored the coal companies, and enabled them to catch up somewhat with their orders. The demand from the West and New England continues heavy.

Charleston, W. Va.—A certificate of incorporation was recently issued to the J. E. Long Coal Mining Co. of Clarksburg. This company will operate in the Clark District of Harrison County. The authorized capital is \$5,000 and the incorporators are John A. Washington, Sydney Britt, H. B. Cooper, Donald Maffet and Merle Steuart, all of Clarksburg.

Pittsburgh, Penn.—During the month of September, the Pennsylvania Railroad Co.'s lines east of Pittsburgh and Erie, carried 1,620,119 tons of anthracite coal, 3,936,824 tons of bituminous coal, and 1,165,994 tons of coke, making a total of 6,722,937 tons, being an increase of 337,560 tons. For the period from Jan. 1 to Sept. 30 the total shipments amounted to 56,201,397 tons.

Fairfax, N. D.—It is said that a briquetting plant at the local coal-mine properties of the Johnson Fuel Co. will be built. The machinery and steel building are all fabricated and will be erected at once. It is the expectation to begin turning out briquettes by Jan. 15 next, and the coal company expects to increase the capacity of the plant to an output of 1,000 tons per day.

Princeton, W. Va.—The Virginian R.R. Co. is calculating that its coal shipments for the past month, will establish a new record. The prospects for a new tonnage figure have been so promising, that a daily tabulation compared with the banner month was kept. If the output for the latter part of the month equals that for first three weeks, the shipments will exceed all previous records.

Pottsville, Penn.—Transportation officials of the railroads centering in this district held a meeting here recently to consider the subject of relief from the present car shortage which is beginning to menace the production of anthracite coal. It seemed to be the general belief that the best plan was for each road to hold its own equipment on its own lines as much as possible.

Chicago, Ill.—The Roberts & Schaefer Co. recently secured contracts for Marcus patent coal tipples from the Carnegie Coal Co., Burgettstown, Penn., and the Valley Smokeless Coal Co., Kring, Penn. It has also received contracts for large reinforced-concrete coaling plants for installation at Youngstown, Ohio, and Brocton, N. Y., respectively from the Pittsburgh & Lake Erie R.R., and the Nickel Plate.

Columbus, Ohio—J. W. Blower and D. C. Thomas, both interested in the Hysylvania Coal Co., and allied interests are planning to buy up tonnage on the Kanawha River and ship to Silver Run, near Middleport, where it will be transhipped to the Hocking Valley R.R. Barges will be used in moving the coal from the mines along the Kanawha. Equipment for loading cars at Silver Run is being installed.

Darragh, Penn.—The Keystone Coal and Coke Co. permitted the storage of explosives in a company boarding house in 1910 and the United States Supreme Court recently upheld a verdict against it for \$14,000 damages, for the death of three persons and injury to another in an explosion during a Christmas Eve celebration, refusing to review the company's appeal from the award made in the lower courts.

Bluefield, W. Va.—With a tonnage of 2,982,919 carried during the month of September, 25,790,526 tons of bituminous coal was shipped by the Norfolk & Western Ry. during the first nine months of 1916. This record is only 3,904,868 tons short of the highwater mark for the 12 months of

last year.—September shipments, although 66,021 less than was carried during the preceding month, showed an increase of 72,719 when compared with September of last year.

Philadelphia, Penn.—A jury in the Federal Court recently ordered the Pennsylvania R.R. to pay to the Hillside Coal and Coke Co. \$42,592.41 as compensation for unjustly curtailing the supply of coal cars to the coal company. In May, 1907, the Interstate Commerce Commission directed the Pennsylvania to pay \$27,193.01 to the coal company. When this award was not paid, suit was entered. The amount given by the jury represents the full amount of the award with interest since 1907.

Marytown, W. Va.—The employees of the Marytown and Big Sandy mines of the Solway Collieries Co. met recently for the purpose of forming a mining institute. The officers chosen were H. A. Baker, president, Herbert Boulden, vice-president, and E. D. Walters, secretary. Professor Purdue from Morgantown gave an interesting lecture accompanied by lantern slides on mine explosions, their cause and prevention. In future the institute will meet each Thursday night.

Buffalo, N. Y.—The Skeele Coal Co., which has maintained an office here several years, has closed it and will transfer it to Boston. E. S. Keay, who has been in charge as Western sales agent, will receive the title of New England sales agent there. The change was apparently made necessary by the severing of connections with the Skeele company by the Lehigh Coal and Navigation Co. and the opening of an office here some months ago, with S. M. Stanley in charge, to look after Western sales.

Louisville, Ky.—Shippers using the Louisville & Nashville Lines received notices recently to the effect that on and after Oct. 26 no coal shipments would be accepted by that company for delivery on tracks of the Illinois Central R.R. in Louisville or for points north of the Louisville & Nashville Lines in Illinois, with the exception of Alton and other points in the East St. Louis industrial district. The inference is that the Louisville & Nashville considers the Illinois Central to be holding an undue number of its cars.

Revioc, Penn.—Hess Brothers, contractors, have been awarded the contract for the erection of 500 new dwelling houses here. The concern will put a big force of men to work at once and hurry the buildings along to the earliest possible completion in order to house the miners for the winter. The town has been established by the Coleman & Weaver coal interests and promises to become one of the largest mining towns in this section of the state. Two mines are to be opened this fall and others will be opened during the winter months.

Des Moines, Ia.—The Iowa Supreme Court recently established a new rule for figuring workmen's compensation due coal miners who are injured, in its opinion in the case of John Richards, appellant, vs. the Central Iowa Fuel Co. Multiply the daily wage by 300 and divide by 52; this fixes the weekly wage. Under the terms of the law, however, the compensation cannot exceed \$10 per week nor be less than \$5. The court held that the compensation should be thus fixed in proportion to the gross income and that there should be no deductions in figuring the miner's wages as a basis for compensation, for powder or blacksmithing. The insurance companies were contending in this case that such deductions should be made.

Philadelphia, Penn.—Strong pressure having been brought to bear upon the state authorities, Francis Shunk Brown, attorney general, has appointed William N. Trinkle, Esq., special counsel to act for the state in bringing to a hearing the anthracite rate case. In December, 1914, the Public Service Commission after having heard testimony for nearly a year rendered a decision ordering a reduction of approximately 40c a ton in the rates on anthracite coal to Philadelphia. The original complaint had been entered before the Commission by individuals representing various business associations. Upon the decision being handed down the railroads immediately appealed to the Dauphin County Court, giving a bond in the meantime guaranteeing the return of the excess freight should the order of the Commission be sustained. During the intervening two years many efforts have been made to get the case to a hearing, but without avail.

Birmingham, Ala.—The Alabama Coal Operators' Association has sent a committee to Louisville to confer with officials of the Louisville & Nashville R.R. regarding the car shortage, which exists on its lines and is assuming disastrous proportions for coal operators and dealers. This road is reported to be 15,000 cars short. Information was received by the committee that the company has placed a large order for coal cars. One Birmingham coal company sent out letters to retailers asking them to lay in stocks of cordwood, as it would be unable to supply them with coal. The Central of Georgia R.R. had at one time only 2.5 per cent. of its usual supply, while every other railroad has felt the shortage to a serious extent. While prices at the mine have increased, the profits of the companies are greatly reduced. Four self-propelled barges have been placed in service on the Warrior River for coal traffic between the Birmingham district and Mobile and New Orleans.

Market Department

GENERAL REVIEW

Wave of hysterical buying forces anthracite to new high levels. Violent price advances in bituminous. Car-supply situation dominates the market. Market for Middle Western grades expanding in all directions.

Anthracite—A wave of hysterical buying swept over the market at the chief distributing centers this week that forced prices up to new high levels. This undoubtedly marks the culmination of the gradually increasing tenseness over the past several weeks, and is not indicative of any new development in the situation; on the contrary, the weather has been so exceptionally mild that the sudden influx of buying is not based upon any logical reason. A moderate shortage is inevitable due to the limited production occasioned by labor and transportation difficulties, but assuming average weather conditions, there is no occasion for such exaggerated anxiety as exhibited by the urgent buying that developed the current week. The situation at these outlying points is undoubtedly strained and some dealers are being obliged to pay premiums above the regular company circular for the first time since the big strike of 1902. The anticipated advance in the company's circulars, as we announced last week, went into effect on the first of the month on certain grades, and it is expected that similar advances will be made on the other grades.

Bituminous—Violent advances setting new high record prices all along the line have occurred during the past week. The situation has all the characteristics of a severe strike market, and a continuation of existing conditions will see typical strike prices in effect. The more conservative buyers are refusing to show any interest in the market at prevailing level, but once they are convinced of the reality of the increases, there will be a substantial broadening out of the market. However, buying is very cautious at the increased prices, even among those consumers whose requirements have been materially increased by increased operating schedules. Railroad embargoes increased materially during the past week, while the car supply was shortened up still further. Some contracting is being done at substantial advances over old figures. Some agencies interested in export trade have cabled withdrawal of all quotations for the time being. Special efforts are required to complete cargoes on vessels at the loading ports, and evidence of the shortage at Tidewater is seen in the fact that a steamer bunkering at Hampton Roads was compelled to load at three different piers.

Lake Market—The car situation has become so acute that it entirely dominates the market. It is a very rare instance where a mine receives 60 per cent. of the required number of cars while congestions are developing, due to the inability of heavy trains to make junction points within the prescribed working hours. The big steel interests continue to bid prices up to prohibitive levels with the result that the majority of consumers are simply out of the market and will continue so until there is a return to something approaching normal conditions. The labor supply is adequate to the present restricted operations, due to the scarcity of cars, but a great deal of anxiety is being caused by the migration of miners to other centers where steady work is assured at equally good or better wages. It seems inevitable that a severe cold snap, which may be expected at any time now, will create a panic condition unless there is some relief developed in the meantime. Evidence of the shortage of coal for Lake shipment is seen in the report that some Lake freighters have been obliged to obtain bunker supplies at the upper ports.

Middle West—General business conditions undoubtedly justify an exceptional market, but hardly such an extravagant range of prices as now prevails. The extreme shortage is due primarily, of course, to the unprecedented heavy industrial consumption, though this has been further accentuated by meagre stocking during the summer, the relatively light tonnage moving up the Lakes, the low-water stage on the Ohio River, and it is understood that some of the railroads are holding large tonnages in cars at the chief distributing centers, accentuating the congestion and car shortage. The market for Middle Western coal has also broadened out in all directions as witnessed by the purchase of 50,000 tons by the Union Pacific R.R., while there is active negotiations on Eastern business and shipments of Illinois coal to the Northwest for October established a new high record.

Year Ago—Anthracite buying slowed up by mild weather, but market has not lost ground. Heavy movement on bituminous contracts. Scarcity of vessels causes accumulations at Tidewater. Lake movement increasing. Middle Western mines on heavy working schedules.

BUSINESS OPINIONS

Boston News Bureau—There is now another spark to kindle the fires of enthusiasm in the shape of new war orders. The public statement of H. P. Davison, of J. P. Morgan & Co., made this clear as did the early announcement of the purposes of the new \$300,000,000 loan. There is no doubt that the allies expect the war to last into the fall of 1917 and that in this event they must buy heavily in this country if they expect to prosecute a vigorous spring campaign. The fact, long since apparent to the big industrial leaders that 1917 business and profits will be as large as 1916, is beginning to reflect itself strikingly. Pig iron has this week advanced \$2 a ton, the activity and demand being without a parallel. The movement of pig iron is as fundamental a barometer of business prospects as it has ever been possible to obtain in this country.

Iron Age—The pig-iron market of the past two weeks is practically without a parallel in the experience of present-day producers. Following advances of \$1 to \$2 a ton recorded a week ago, prices in all Northern selling centers have gone up \$2 to \$3 more, with every indication that high levels will be reached. The advances are unprecedented in being due, not to a clamorous demand for iron for quick shipment, as in all previous excited markets, but to a simultaneous effort of buyers to cover far forward requirements—in many cases through the second half of 1917.

American Wool and Cotton Reporter—A large demand for fine-combing wools in the grease was the principal feature of the wool market for the last week, during which 9,500,000 lb. were sold. These wools appreciated in price considerably as business progressed. Fine medium clips of territory wools in the original bags sold on a basis of 95c. to \$1 a pound clean, on large lines. Sales of scoured wools to the manufacturers brought dealers into the market to replace stocks sold for large weights.

Dun—Disproportion between demand and supply is more pronounced than at any previous time, and the rise in prices continues apace. Widely divergent lines exhibit steadily increasing strength and, though most commodities are already at an extreme position, there is no sign that the crest has yet been reached. In steel and iron, in textiles, and in other branches the eagerness of buyers is regarded as foreshadowing still further advances the growing scarcity of materials and products impelling urgent efforts to cover for distant requirements. Commercial failures this week in the United States are 289 against 297 last week, 277 the preceding week, and 381 the corresponding week last year.

Bradstreet—Large profits on an unexampled business by manufacturers, unprecedented wages and earnings by industrial workers and high record prices for all farm products at the height of the crop-moving season constitute a combination of stimulating features such as has never heretofore been experienced at one time. Nevertheless, there is clear evidence that a groundswell of speculation is sweeping parts of the country, and in other instances fears that there may not be enough goods to go around tend to produce seemingly unnatural desires to cover prospective requirements for far-off periods. With such conditions, plus ascending prices for raw materials, confronting them, manufacturers, particularly of textiles, are proceeding with caution in booking business for distant delivery.

Dry Goods Economist—The principal feature in the dry goods market this week was the advance of raw cotton to above the 20c. mark for May and July. This was followed by a steep reaction. Much attention was given to the Census Bureau report, which showed 7,291,000 bales ginned, against 5,708,836 bales for the same period last year.

Marshall Field & Co.—Wholesale dry goods distribution for the current week shows large gains over the corresponding period of 1915. Road orders for immediate and future shipment have been in heavier volume than for the same week of past years. Merchants have visited the market in much larger numbers. Collections for the week are in excess of the same period last year. The market on domestic cotton goods is firm and advancing.

Modern Miller Outlook—Crop promise in the winter wheat belt shows improvement. Additional rains have permitted farm work to proceed. Early sown is above ground and presents strong appearance. There is still some seedling to be done in all states, but this is comparatively small. Importing countries are big holders of wheat futures at Chicago, and these lines have been sold against goodly part of visible supply, as well as wheat, held in country elevators. Owners of these futures will, it is said, demand delivery.

Atlantic Seaboard

BOSTON

Hampton Roads coals are still quoted at \$5 f.o.b., though offerings are small. A few spot sales for coastwise delivery. Georges Creek deliveries practically nil. Pennsylvania coals continue soaring. Dealers much alarmed over anthracite shortage.

Bituminous—While there has been no marked development this week, there is steady progression toward higher prices and a correspondingly active market. A few sales have been made to consumers, so that inquiry is that much broader, the spot buying hitherto having been confined largely to shippers who were short of coal to load their boats. Receipts at Tidewater are still further reduced, and the prospect gets more discouraging daily. There is no apparent reason why prices should not continue climbing, and \$6 is more than a possibility within a short time. A shortage of cars is affecting even the roads that do less Western business and it is plain that we are in for a period of slow loading and heavy demurrage charges. Once our conservative Eastern buyers are persuaded prices are up to stay, at least for a while, there will doubtless be a broader market.

Meanwhile, the weather has not been favorable to the movement of boats. Shortened receipts are the rule everywhere. The extra demand from inland buyers at points like Boston and Providence that lately increased on account of embargoes all-rail is causing on-car prices to jump; \$7.50 has been quoted but most distributors have very little free coal.

The City of Boston harbor institutions contract for 17,500 tons was finally awarded to the New England Coal and Coke Co. on Oct. 25. The prices at the different plants averaged about \$7 delivered alongside, these bids having been opened Sept. 21. Purchases generally are only for small tonnages. Even those steam plants that are working overtime and are sure to need much larger supplies are buying very cautiously. On the other hand, the shippers are not disposed to make prices except for prompt shipment.

The Georges Creek factors have again practically ceased deliveries to this market. The situation on labor and cars continues most unfavorable in the region and on most boats reporting at Baltimore for this grade there is indefinite delay. Consumers dependent on this grade find themselves in a difficult situation. On top of everything else the movement of barges is much hampered by weather.

The most active request in this market is for the Pennsylvania grades both all-rail and f.o.b. vessel at Philadelphia and New York. Prices go up about every day, and there is no telling where they will stop. Embargoes are still effective for much of the all-rail territory, but there is a steady demand from the points still open; \$4.50 has been rumored as a price on fair-grade coal and \$4 is now talked about as an average level between now and Apr. 1. There is some speculative buying at Tidewater, but so far it is confined to small factors. No comprehensive buying of this sort has yet been heard.

It is apparent, however, that contracts are being made for a 12-months' period from Nov. 1. A moderate tonnage was closed from Oct. 1 for \$2.10@2.25 as a uniform price, but \$2.75 is now reported as nearer the ruling figure. Buyers who make contracts of this kind do it chiefly because of increased wants and also to relieve themselves of worry throughout the winter season; \$7 is quoted as a price on good-grade Clear-fields alongside Boston.

Bituminous at wholesale is quoted about as follows, f.o.b. loading ports at points designated, per gross ton:

	Clear-fields	Camb. & Som's't	Geo's. Creek*
Philad'la...	\$4.35@4.85	\$4.65@5.15	\$3.07@3.17
New York...	4.65@5.10	4.90@5.40	3.37@3.47
Baltimore...			3.00@3.10
F.o.b. mines	3.10@3.85	3.50@4.10	2.00@2.10

* On contract.

Pocahontas and New River are quoted at \$5, f.o.b. Norfolk and Newport News, Va., and \$7 on cars Boston and Providence for inland delivery.

Anthracite—The expected advance on company coal was announced for Nov. 1. This is in line with the recent advance in barge rates from New York to Boston on the part of some of the company shippers, who own such transportation. One of the latter has in effect chartered its fleet to load coal of other shippers.

The retail situation in many parts of New England is getting very much strained. In Providence, R. I., on Oct. 30, egg, stove and chestnut were advanced to \$12, and pea to \$9, Lehigh 50c. extra. Dealers are getting dazed by conditions, there is so small a chance for improvement in any respect. Some who have not been obliged to take premium coal since 1902 are now paying the price to get a temporary supply; \$7.25 has been paid f.o.b. mines for stove, and the end is not yet.

NEW YORK

Anthracite continues short and prices soaring. Companies making partial deliveries to regular customers but many dealers are running short. Little activity would produce a panic in bituminous market. Mine price over \$6 with indications pointing to further increases.

Anthracite—With quotations double the regular winter schedule and demand increasing the firmness of the hard coal situation has become further accentuated. Market conditions are bordering on a panic and the anxiety of consumers has driven dealers into the field to procure coal at almost any price. With the exception of during the six months' suspension in 1902, present quotations are about the highest ever made for hard coal. There has been a steady advance in price and every day brings forth new quotations.

The companies are taking care of their regular trade by making partial deliveries but the quantity is so small that dealers are scouring the market for additional tonnages. Individuals are reaping the harvest and it is said there are many speculators who manage to get small tonnages.

The report that there would be a new schedule issued to take effect Nov. 1 stirred the trade considerably, and one of the companies early in the week announced a new schedule for deliveries to Long Island and New England points.

Supplies in New England have not been increased and the situation is extremely serious. Buyers are seen everywhere throughout the mining regions, while other representatives of the same firms are watching the wholesale offices. Stories are told of how dealers buying a cargo of coal in one office are offered advances over their buying price by other dealers whom they happen to meet in the corridors of the building in which the sales are made.

Demand from the West continues heavy and there is a rush to send coal forward before the close of navigation. What if any benefit will be derived by Tidewater interests when lake shipments stop is problematical. There are those who believe the railroads will send coal forward in box cars.

Line trade is in better shape than the Tidewater situation. Most dealers are able to obtain at least a partial supply while many others have ample space to store considerable coal which they purchased during the spring months. Mine prices are stiff ranging from \$8.50 to \$9.50 for the prepared coals.

Locally the consumers are on the verge of a panic and are flooding dealers with orders. Quotations range from \$10 to \$11 f.o.b. while all retail prices have been withdrawn, some retailers quoting as high as \$12 a ton on Tuesday of this week. Pea coal is becoming stiff and premiums of \$2 have been paid for it.

Demand for the steam coals is gaining and individuals are quoting advances of \$1 and over for some of them. The better grades are not to be had at any price.

Current quotations per gross ton, f.o.b. tidewater, at the lower ports are as follows:

	Circular	Individual
Broken.....	\$4.95	
Egg.....	5.45	\$10.00@11.00
Stove.....	5.70	10.00@11.00
Nut.....	5.75	10.00@11.00
Pea.....	4.00	4.00@ 6.00
Buck.....	2.75	2.75@ 4.00
Rice.....	2.20	2.20@ 3.50
Barley.....	1.95	1.95@ 2.75
Boiler.....	2.20	

Quotations at the upper ports are generally 5c. higher on account of the difference in water freight rates.

Bituminous—There is no sign of abatement in the soft coal situation and the Tidewater market has crossed the \$7 line with a tendency toward still higher prices. Quotations at the mines are higher than on the tidewater basis. One feature of the market during the week was the announcement that some Somerset operators advanced their contract prices 20c. per ton.

Much of the present stiffness of the market is attributed to the desire of large consumers to fill their bins before real winter becomes an actuality. Some of these consumers are willing to pay almost any price for coal. Many industrial plants in the Metropolitan district are running short of supplies and some may be compelled to close down entirely unless the situation is soon relieved.

Contract coals are moving slowly owing to car shortage and light production. Free coals are scarce. Labor troubles continue to bother operators.

A little activity on the part of consumers would produce panicky conditions and result in prices going considerably higher. The local market is bare of coal and the price is a secondary condition. Mine prices range from \$5.25 to \$6.50 for the better grades with good coals holding stiff

at from \$5.20 to \$5.45. Slack was quoted at the mine at \$6. Harbor quotations on good grades were generally from \$7 to \$7.25.

Some firms doing an export trade have cabled their European representatives withdrawing all quotations.

Current quotations, per gross ton, f.o.b. Tidewater, for various grades are as follows:

	South Amboy	Port Reading	Mine Price
Georg's Crk.			
Big Vein...	\$7.00@7.50	\$7.00@7.50	\$5.50@6.75
Tyson....	7.00@7.25	7.00@7.25	5.50@6.50
Clearfield...	6.75@7.00	6.75@7.00	5.25@5.50
South Frk....	7.00@7.25	7.00@7.25	5.50@6.50
Nanty Glo...	7.00@7.25	7.00@7.25	5.50@6.50
Som'r. Co....	7.00@7.25	7.00@7.25	5.50@6.50
Que'bo'ing...	7.00@7.25	7.00@7.25	5.50@6.50
W. V. Fairm't			
Th'r'qua...	7.00@7.25	7.00@7.25	5.20@5.45
Mine-run....	7.00@7.25	7.00@7.25	5.20@5.45
West. Md....	6.75@7.00	6.75@7.00	5.25@5.50

PHILADELPHIA

Anthracite shows slight improvement, but only temporary. Dealers complain of discrimination in favor of other markets. Holidays reduce mine production. New steam prices. Bituminous figures jump, sales being made at \$5 and higher prices seem certain.

Anthracite—The local situation seems to show some improvement due to more liberal shipments of chestnut and pea, but probably more on account of the very mild weather conditions. However, there is no improvement in mining conditions and much of the extra coal is from the storage yards, the supply of which is limited as compared with other years. The production is certainly less, due largely to the eight-hour day and to the continued shortage of labor. One large company reports their loss in tonnage amounts to one normal day's output each week.

The week opened with the retail men reporting a sudden falling off in orders, as the public is fairly well supplied for current consumption. Nevertheless the dealers have not slackened in their efforts to increase their stocks; the demand will soon be extraordinarily heavy, and they know better than any one else the really small quantities of coal in storage. The people have never let up in their complaint of high prices and have only ordered enough to last for a short period.

Many bitter complaints are heard against the shippers lately, the retail men claiming that the local trade is being neglected in order to take advantage of the premium prices in other markets. There is no doubt that prices at the mines, as high as \$7.50 for stove coal and \$3.50 for pea, are being received for coal shipped to Western markets. The shippers still insist that they are taking care of their trade as well as can be expected, considering how they are handicapped with a shortage of labor and with the car situation daily becoming more acute.

Shipments were curtailed this week by two holidays, Mitchell Day on Oct. 30 and All Saints' Day on Nov. 1. With Thanksgiving day to come and a short month at that, the outlook for a good production is poor.

When carefully considered, the situation is actually alarming, though much depends on the winter. If the weather is severe, the entire country served by the anthracite interests is bound to be short of fuel. All the dealers here are trying to buy to the full capacity of their yards, regardless of the sizes of coal. Stove coal, which is in such unusual demand, cannot possibly be produced in sufficient quantities.

There are also a number of dealers now who are endeavoring to buy all the storage pea and chestnut obtainable before that supply is exhausted, as the production alone will not suffice. While the companies are making efforts to move this in good quantity they are very badly handicapped with a poor car supply.

Altogether the trade is in a very unsatisfactory state, as the retail man is in no position to book orders very far in advance, while labor conditions are so uncertain. The strike of the yard employees of the largest retail company in the city that has now been in effect for over a week, does not bring peace of mind to the proprietors of other yards, as it is known that an effort is being made to induce a general strike.

One of the reasons for the small stocks in the hands of the consumers is that the publicity given to all the proposed investigations into the anthracite business has prevented many users of the domestic sizes from buying their usual quotas during the spring and summer. Many people imagined the Government was about to step in and compel the coal companies to reduce prices and the railroad companies to reduce freight rates. They considered the spring circulars too high and awaited lower figures.

This week one of the largest companies quietly announced a new schedule of prices on steam sizes. This caused no particular surprise, as it was felt that with bituminous coal so high it was soon bound to occasion higher anthracite prices. With this company now quoting \$3 on pea coal for strictly new business, there is little doubt but that all buyers will be paying this price, if not more by the first of the year.

Prices per gross ton, f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide shipment, are as follows:

	Line	Tide		Line	Tide
Broken...	\$3.60	\$4.75	Buck....	\$1.65	\$2.55
Egg.....	4.15	5.25	Rice.....	1.00	1.90
Stove....	4.10	5.60	Boiler....	.90	1.80
Nut.....	4.50	5.55	Barley....	.75	1.65
Pea.....	2.80	3.70			

Bituminous—The bituminous market is running wild and the current week witnessed violent advances in prices, ranging from \$1 to \$1.50. In Fairmont gas coal, where the customers insisted on selecting a coal low in sulphur, the price increase ranged from \$1.90 to \$2.25, setting the record for the present market. There does not seem to be a doubt that a price of \$5 and even more on all grades will be reached and passed by the end of the week. It is pointed out that conditions in this respect are very much similar to those prevailing during the anthracite strike of 1902, when bituminous coal reached the price of \$10.

Big consumers of fuel continue to compete with brokers for coal by sending purchasing agents in all the different regions. At the present rate of advance the \$10 figure is bound to be reached by Jan. 1 at the latest. To add further to the difficulties strikes are beginning to break out, the men demanding increased wages despite the recently signed agreement. This week the men in the Latrobe district and those in the territory served by the B. R. & P. R.R. struck when their demand for increased wages was refused.

The car situation grows worse and reports are common of mines being shut down two or three days the past week. In addition embargoes are becoming frequent, although they have not been of long duration. We hear also a great deal of trouble arising from broken contracts.

We are giving below a list of prices per gross ton f.o.b. cars at mines, but it must not be considered that these figures are ruling at the time this reaches the reader, as changes now are occurring hourly. Nevertheless the prices will serve as a fair basis of conditions and will give a record of the figures at which sales have recently been made:

Georges Creek Big Vein.....	\$4.75@5.00
South Fork Miller Vein.....	4.75@5.00
Clearfield (ordinary).....	4.50@4.75
Somerset (ordinary).....	4.35@4.50
West Va. Freeport.....	4.25@4.40
Fairmont gas.....	5.25@5.75
Fairmont gas, mine-run.....	5.00@5.25
Fairmont gas, slack.....	4.25@4.50
Fairmont lump, ordinary.....	4.70@4.80
Fairmont mine-run.....	4.50@4.60
Fairmont slack.....	4.25@4.50

BALTIMORE, MD.

A record-breaking bituminous market and coke prices the highest in years. Tidewater nearly swept clear of fuel. Anthracite grows scarce.

Bituminous—The market for bituminous is a record-breaker in many ways. It sees the greatest car shortage in years, the highest prices in the recent history of the trade, and has occasioned the liveliest scramble for fuel by industrial plants that has been seen here for a long time past. With a car supply at times as low as 10 per cent. on certain days and seldom more than 30 per cent. requirements, prices have climbed steadily all week. It is hard to fix any definite schedule. An average of about \$5 to \$6 a ton at the mines is now maintained, and in some cases there have been sales here at tide on a mine basis as high as \$6.50. The Baltimore & Ohio Railroad is particularly hard hit; it has about 23,000 of its 52,000 coal cars off its own system. In an effort to improve conditions the B. & O. has embargoed twenty roads in full, and has placed an embargo against the P. & R. for all tide points, while maintaining movement to line points on that system.

Prices to the trade at the mines are about as follows: Georges Creek, Tyson, \$5.50 to \$6; Somerset, \$5 to \$5.50; South Fork, \$5; Clearfield, \$5; Quemahoning, \$5.50; Latrobe, \$5; Freeport, \$5; Fairmont gas, 3/4, \$5; mine-run, \$4.50; slack, \$4.50.

Anthracite—Deliveries generally are being apportioned according to supplies received, supplemented to some extent by storage supplies. All classes of hard coal are scarce and even premium offers are not bringing fuel as desired. Smaller sizes are particularly short. The industrial world is short of both anthracite and bituminous, and while there have been no shut-downs so far here some big plants are running pretty close to the danger line.

Exports—Through special efforts to complete cargoes on vessels that had been waiting here under contract to load coal, the foreign movement showed an increase the past week. This movement, however, pretty well cleared local terminals of free coal. The export movement for the week totaled 15,553 tons.

HAMPTON ROADS

Shortage of coal and ascending prices. No improvement in receipts. Practically all vessels delayed. Quotations reach new level.

There is no improvement whatever in the car situation and receipts are consequently on the same meagre basis as last week. The Virginian has suffered least from the shortage, due to the fact that it has no Western outlet and all coal mined must move East, principally to Tide-

water. However, the demand from Virginia and the Carolinas for inland shipment are now assuming such proportions that the advantage will be short-lived.

Nearly all of the coal shipped from Hampton Roads is Pocahontas and New River, but there are a few cargoes of high volatile coals moving, the steamers "Harbury" and "Vaarll" loading this description for export, and a few barges for New England. As forecast last week, prices have advanced sharply and Pocahontas and New River is being sold at \$6 f.o.b. Hampton Roads, several of the larger shippers declining to quote below this figure.

Fast despatch is now the rule rather than the exception and shippers are hard put to avoid demurrage claims, though it is doubtful if ship-owners could collect any demurrage under the existing conditions. An unusual shipment went forward recently per the steamer "Chipana" for Punta Arenas, Chile. Fewer ships now call at this port since the opening of the Panama Canal. As an illustration of the scarcity of coal, it is interesting to note the case of a steamer this week which bunkered at Lamberts Point, shifted to Sewalls Point for part cargo and shifted from there to Newport News to complete loading. Freight rates, both coastwise and foreign, are at recent levels, space from Hampton Roads to Boston being around \$2.

Tonnages dumped during the month are as follows, in gross tons:

Norfolk & Western Ry.	553,462
Chesapeake & Ohio Ry.	333,603
Virginia Ry.	400,437
Total	1,287,512

Prices advance from day to day and are, at this writing, based on actual sales, as follows:

Pocahontas and New River for export and cargo shipment \$6@6.25 per gross ton, for bunker delivery \$6.25@6.50 per gross ton, on track for local consumption \$5.25@5.50 per net ton. Anthracite dealers are still making deliveries on old orders taken at the summer price of \$7.50 per net ton delivered, but new business is quoted at \$8.50 per net ton, delivered.

THE PANAMA CANAL

For the week ending Oct. 7 only one steamer with coal passed through the canal. This was the steamer "Lynorta" from Baltimore to Callao with 4,936 tons of coke, coal, etc.

Ocean Shipping

OCEAN FREIGHTS

Freight conditions are practically the same as a week ago. There are a number of prompt boats asking for coals to the East Coast of South America, which boats can be secured on favorable terms, but, unfortunately, very few shippers can take advantage of this opportunity, owing to the scarcity of prompt coal. For later loading there are also a number of large boats asking for coals to Brazil or the Plate, that can be secured on favorable terms. To the West Coast of South America boats offer freely with rates much in shippers' favor. Mediterranean rates are unchanged. We would quote freight rates on coal by steamer as follows:

	Oct. 23	Oct. 30
West Coast Italy	\$26.40@27.60	\$26.40@27.60
Marseilles	24.00@25.20	24.00@25.20
Barcelona*	21.60 about	21.60 about
Montevideo	12.00 about	12.00 about
Buenos Aires	12.00 about	12.00 about
Rosario	13.20 about	13.20 about
Rio Janeiro	11.00@11.50	11.00@11.50
Santos	11.50@12.00	11.50@12.00
Chile (good port)	8.00 about	8.00 about
Havana	3.50@4.00	3.50@4.00
Cardenas, Sagua	5.00 about	5.00 about
Cienfuegos	4.50@5.00	4.50@5.00
Port au Spain	6.00@6.50	6.00@6.50
St. Lucia	6.00@6.50	6.00@6.50
St. Thomas	5.50 about	5.50 about
Barbados	6.00@6.50	6.00@6.50
Kingston	4.50@5.00	4.50@5.00
Curaçao	5.50@6.00	5.50 about
Santiago	4.50@5.00	4.50@5.00
Guantanamo	4.50@5.00	4.50@5.00
Bermuda	4.50@4.75	4.50@4.75
Vera Cruz	5.50 about	5.50 about
Tampico	5.50 about	5.50 about

* Spanish dues for account of cargo. † And p.c.

‡ Other good Spanish port.

W. W. Battie & Co.'s Coal Trade Freight Report.

Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer's arrival at or off port of discharge."

COASTWISE FREIGHTS

There is little change in marine rates from Hampton Roads to Boston. It is still fairly easy to secure prompt bottoms if loading can be guaranteed, but transportation owners are shy of sending boats to the Chesapeake without firm charters; \$1.75 is quoted to New Bedford and \$2 to Boston.

Up to \$2.25 has been paid on barges from New York to Boston and the demand is so active that rates will probably be considerably higher.

The only retarding factor is the inability of several shippers to furnish coal promptly enough.

One dollar and thirty-five cents continues the rate out of New York to Fall River and New Bedford. Charters have been made at \$2.50 and towages to Biddeford, and at the same rate without towages to Bathy and Bar Harbor, all State of Maine points.

VESSEL CLEARANCES

The following vessels have cleared with coal cargoes during the past week:

Vessel	Destination	Tons
Major Pickands ⁴	Alicante, Spain	1,482
Tapajoz ⁵	Rio de Janeiro, Brazil	4,603
Saint Andrews ⁴	Havana, Cuba	4,531
Chimu ³	Iquique, Chile	1,483
Dorothy B. Barrett ⁴	San Juan, P. R.	2,917
Gwendolyn Warren ^{1,2}	Kingston, Jamaica	472
Vaarli ¹	Buenos Aires, A. R.	6,873
Confidenza ¹	Genoa, Italy	5,017
Edwin G. Farrar ³	St. Georges, Bermuda	815
Socotra ⁴	Rio Grande do Sul, Brazil	2,671
Parana ³	Rio de Janeiro, Brazil	5,713
Chipana ³	Punta Arenas, Chile	2,002
Luigino Accame ¹	Genoa, Italy	628
Harbury ^{1,2}	Bahia Blanca, A. R.	7,062
Joel Cook ³	St. Georges, Bermuda	581
Neuquen ⁴	Bahia Blanca, A. R.	5,090
Wellington ⁶	Dakar, F. W. A.	8,245
Doris ⁷	Italy—Any port	5,530
Manitowoc ⁸	Buenos Aires, A. R.	2,995
Achilles ^{1,11}	Cristobal, C. Z.	12,019

NEWPORT NEWS

Jevington ⁹	Frey Bentos, Uruguay	3,845
Marion N. Cobb ¹⁰	Sanchez, Dominican Republic	612
Waltham ²	San Juan, P. R.	715
Dakotan ⁵	Para, Brazil	7,600
Manitowoc ⁶	Buenos Aires, A. R.	2,056

PHILADELPHIA

Dictator	Manzanillo	623
Frank Brainerd	Nassau	
Ereaga	Valencia	1,602
Bryssel	Manati	829
Rodfaxe	Havana	1,035
Hermod	Fort de France	
Annie Stratton	Humacao, P. R.	
Skinfaxe	Guantanamo	
Nordland	Havana	
Wm. C. May	Marin Bay	607
Albert H. Willis	Paramaribo	487

BALTIMORE

Graafaxe	Cuba	1,796
Claveresk	Cuba	6,100
Salstad	Egypt	5,689
Gulfaxe	Panama	1,968

¹ Pocahontas Fuel Co. ² Berwind-White Co.
³ Castner Curran & Bullitt. ⁴ Baker-Whiteley Co.
⁵ Smokeless Fuel Co. ⁶ C. H. Sprague & Son.
⁷ Flat Top Fuel Co. ⁸ Maryland Coal & Coke Co.
⁹ C. & O. Coal Agency Co. ¹⁰ Island Creek Coal Sales Co.
¹¹ C. G. Blake & Co. ¹² Clinchfield Coal Co. ¹³ Hasler Bros.

OCEAN CHARTERS

Coal charters have been reported as follows during the past week:

Vessel	Destination	Tons	Rate
Boden	Gothenburg	2,128	
Frank Brainerd	Nassau		\$5.50
Ereaga	Valencia	1,602	
Josey	Havana	1,670	
Rodfaxe	Havana	1,035	
Bryssel	Manati	829	
Geo. F. Klink	Plymouth	800	2.50
J. Edward Drake	Martinique	789	6.75
Margaret Thomas	Porto Rico	1,161	

VIRGINIA

Edward H. Lawrence	Barcelona	2,483	\$14.00
Dakotan	Rio Janeiro	4,068	11.00
Teviotdale	River Plate	2,538	11.40
Wagama	Rio Janeiro ¹	2,609	11.50

NEW YORK

Carib II	San Domingo	195	
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¹ And Montevideo.

Lake Markets

PITTSBURGH

Car shortages more acute. Fancy prices paid for spot coal by a few buyers, the great majority being out of the market.

The car scarcity which has been causing such sharp advances in prices in the spot market for several weeks has been accentuated farther in the past week and is now at an acute stage. Very few shippers are able to ship their full contract tonnages. Occasionally there is not a single car on a whole division and it is rare that a mine

receives an average of 60 per cent. of its allotment for a full week. Last week was characterized by very poor supplies throughout and this week is an improvement only to the extent that it starts with better supplies than were being furnished the last two days of last week. Such an improvement, however, is normal, and does not promise that cars will be better throughout the week.

To the reduced loading of coal there is added a great increase in the quantity of coal in transit, whereby the receipts at destination have decreased more than the shipments. Many trains have been stalled before reaching junction points because they could not make the point within the 16-hr. limit allotted the crew and as men are scarce the railroads have been greatly inconvenienced.

The spot market is higher, with still fancier prices being obtained, but the market is a very narrow one. The great majority of buyers cannot afford to pay current prices and are simply out of the market. As high as \$6.75 per gross ton for best gas coal has been bid from the outside, while for several days bids of \$5 per net ton have been made unavailing for byproduct coal and it is believed a round tonnage could be sold at \$5.50. There have been sales of ordinary steam coal at \$5 and of gas coal at \$5.50. Slack has not advanced in proportion. While there is a little inquiry as to contracts neither buyers nor sellers are anxious to approach a problem made so serious by the present famine. We quote the spot market roughly as follows: Slack, \$4@4.50; mine-run, steam, \$5; gas, \$5.50. Screened coal might be quoted at the usual differentials above mine-run, but such distinctions are practically lost.

BUFFALO

Prices still feverish. Scarcity of cars and men appears to increase. Still little excitement on the part of consumers. Lake shipments about as usual.

Bituminous—There is all of the former excitement in the trade. Contracting is heavy and if the seller is able to find coal enough there is little demand; if he runs short, however, the price is large, though as a rule Buffalo is not paying the top price to any great extent.

Visitors to the bituminous regions find that the scarcity of coal has created considerable confidence among buyers. Quite often the producer will not make any quotation, or if he does the price is placed so high that an order is not expected. Then the car movement is so slow that nothing can be reckoned on it. There are some embargoes, but shippers are generally able to avoid them. At the same time the car situation is about as unsatisfactory as it well could be.

The miners are very hard to manage. They work as they please and there are strikes here and there, mostly for higher wages. The strike of the Rochester & Pittsburgh miners in the Reynoldsville district appears to have failed. It cut down the coal production seriously, but the men are going back to work.

Prices are what the consumer is willing to pay. They are about as irregular as they have ever been and all quotations must be taken with allowance. With contract prices based on \$2.95 for Pittsburgh lump, single orders are about as follows, per net ton, f.o.b. Buffalo, all sizes nearly uniform:

Youghiogheny	\$5.75@6.75
Pittsburgh	4.95@5.45
No. 8	4.80@5.30
Allegheny Valley	4.70@5.20
Pennsylvania Smokeless	4.85@5.35
All Slack	4.50@5.00

Anthracite—All sizes of coal are scarce. Some country towns are practically out of some sizes and stove and chestnut are hard to get anywhere. Still some leading shipping agents believe that the shortage will not increase in this territory and that it will gradually disappear. The independent dealers are as short as any one and are trying to obtain \$3 premium, though \$2 is about as high as most people will pay.

There is much complaint of car shortage and this, coupled with the scarcity of men, makes it hard to keep a supply of any of the popular sizes. False reports of conditions are on the street often. One day lately it was stated by some one that there was no chestnut coal in Buffalo, but retailers replied that they had a supply, though it was not plentiful.

Lake shipments are about as usual, with all the companies much behind their totals of last season. It looks as if they would all go into winter with less on Western docks than they need. The loadings for the week here amounted to 75,550 net tons, of which 34,000 tons cleared for Duluth and Superior, 16,750 tons for Chicago, 7,800 tons for Sheboygan, 7,100 tons for Fort William, 6,700 tons for Milwaukee, 2,000 tons for Port Arthur and 1,200 tons for Racine.

Rates of freight are strong at \$1 for Chicago and Racine, 85c. for Milwaukee, 75c. for Sheboygan and 30c. for Duluth and Fort William.

The standard anthracite companies are making former winter prices to buyers in car lots, as follows:

Grate	\$5.85	Chestnut	\$6.35
Stove	6.10	Pea	5.00
Egg	6.10	Buckwheat	3.50

Prices are all f.o.b. cars, with 25c. per ton additional for delivery on board vessel.

DETROIT

Strong demand and short supply the feature of the steam-coal trade. Domestic bituminous brings higher prices. Lake shipments are reduced.

Bituminous—While there is a more or less constant inquiry for steam coal in the Detroit market there is no improvement in the supply, the result being a steady advance in prices. It is not known that any of the consumers have failed to get coal, though the movement from the mines is slow. With demand for slack exceeding that for other sizes a price of \$3.75 at the mines is now being quoted on practically all coal of that size. Mine-run and three-quarter lump are quoted at about \$4 at the mines.

There is a good demand for domestic sizes with stock difficult to obtain, even with weather conditions mild. Little smokeless coal is to be had and quotations on nut or lump and egg range around \$5 at the mines. For West Virginia 4-in. splint lump, Kentucky splint lump and Hocking domestic lump \$4.25 at the mines is being asked. It is reported that stocks in the hands of many of the retail dealers are running low and that they are finding it almost impossible to maintain the normal ratio between deliveries and yard balances.

Anthracite—Stove and egg coal are still retailing at \$8.50 and chestnut at \$8.75. Retailers find it difficult to renew their stocks but are confident they will be able to prevent customers having no fuel. Wholesalers complain of delays in shipment. On some recent sales, wholesale dealers say premiums of about \$3 have been paid for prompt delivery of either stove or chestnut sizes.

Lake Trade—With the present slow movement of coal to Lake Erie docks, some of the Lake steamers are having considerable difficulty in obtaining fuel. In some instances it is said to have been necessary for freighters to fill their bunkers at docks at the head of the Lakes. Shippers are no longer able to provide cargoes even for the ships they contracted to load during the season and many of the carriers are making the upbound trip without cargo. There is a light demand for small carriers to deliver coal at side ports. On most of the business to ports on Lake Superior the contract rates apply. Shipments to Lake Michigan ports, because of the difficulty of obtaining cargoes for the return trip, take a rate higher than to Lake Superior.

TOLEDO

Supply and demand regulating prices. Lake movement heavy and car shortage a serious proposition.

The smaller retail concerns are informing their patrons that they have not a pound of coal or coke and do not know when they can get it. Most of them have vague promises from some wholesale or jobbing concerns of a possible car of coal which they may be able to get within two or three weeks but that is about all.

There is no car congestion here but the car shortage is a stern reality and is playing havoc with coal trade in this city. It is estimated by local dealers that there is at least a 50 per cent. shortage in the coal fields. The railroads are making great efforts to induce shippers to return cars promptly. However this may be there is a decided shortage of both cars and coal. Prices are soaring above anything known here since 1902.

The Lake movement is exceptionally strong, every available bottom being picked up despite the exorbitant prices charged. There is no Pocahontas on this market. No new contracts are being accepted. The law of supply and demand is regulating the business entirely and prices are out of sight. Fine coal which ordinarily is quoted at 75c. is now bringing around \$4.

CLEVELAND

Cleveland faces severe coal famine. Unparalleled shortage of cars. Prices the highest since 1903. Steel plants unable to get gas coal. Steamboat fuel very scarce.

Industrial grades of coal, already selling at several times their normal value, are certain to advance to still higher prices. Right now this city faces what conservative leaders describe as a calamity in fuel shortage. An unparalleled shortage of cars, a breakdown in railroad organization, is blamed for the crisis. Normally over 500 cars of steam coal daily come into Cleveland and now the receipts are less than 200 cars.

The steel industries in eastern Ohio, who have the low freight rate from the Pittsburgh fields and who have always used gas coal in steel making are buying Ohio coals at prices around \$5 per net ton at the mines. Gas coal cannot be bought for anything like prompt shipment at the present time and all indications are that the shortage will grow worse.

Slack coal is bringing a trifle less than coarse coals in these markets.

On Oct. 31 the gas supply furnished to manufacturing plants was discontinued and as practically all the large consumers have to use coal, it had a tremendous effect on prices on the Cleveland market.

Lake shipments are so small that this end of the business has seemed to drop out of sight. Shippers decline to bid on this business as it would take some time to accumulate a cargo and rather than tie up tonnage that would take some time to ship, they prefer to sell from day to day.

It is the opinion of most all coal men that no price up to \$10 is impossible. The best quotations

for immediate shipments at the end of last week were as follows: Ohio No. 8 three-quarter, \$4.50 per net ton f.o.b. mine; mine-run and slack, \$4.25 per net ton f.o.b. mine. Cambridge and Middle District coals from Ohio are bringing the same prices as No. 8, based on a delivered price, as these districts take a lower freight rate into Cleveland. Youghiogheny gas three-quarter is \$6 at the mines; Fairmont gas coals, \$4.50; West Virginia splints, gas or steam, \$4 at the mines, and Kentucky lump for domestic purposes, \$3.50 at mines for November shipment.

Lake coal shippers are not getting any more coal than they were and Lake bunker coal is not easy to get. Fueling steamboats is being done at a loss by most dealers, and shippers prefer that boats loading coal should get their bunker supply elsewhere.

Shipments to Duluth, Minn., for the season, to Oct. 1, were 6,306,378 tons of soft coal and 950,231 tons of hard coal. The total of all coal shipped was 7,256,609 tons against 5,891,800 tons a year ago, a gain of 1,364,800 tons.

The City of Cleveland let a year contract for 5,000 tons mine-run at \$2.84 per net ton f.o.b. Cleveland. This is on the basis of \$1.94 f.o.b. the mine.

COLUMBUS

Greater scarcity of coal and still higher prices. Car shortage is increasing.

The coal trade in Columbus territory continues strenuous in every way. The car shortage has still further reduced stocks, which coupled with the extraordinary demand caused another jump in quotations. A coal famine is threatened in many sections and at the first real cold snap it is believed that considerable suffering will result. Future prospects are for even higher quotations and a continued shortage of railroad equipment.

The shortage of stocks is affecting both the retail trade and large steam users alike. Plants requiring a large tonnage to operate are short and there are indications of a stoppage unless something happens to increase the supply. This is especially true of public utilities corporations and public institutions. Iron and steel plants are requiring a large tonnage and the railroad consumption is also heavy. Buying off the open market is difficult as all available tonnage is quickly snapped up. Buyers from Michigan and Indiana points are overwhelming the Columbus market; price is no object, all they want is to be assured of deliveries.

The Lake trade is still rather active considering the car situation. During the past week the Toledo docks of the Hocking Valley loaded 126,000 tons, which is a good record. Lake shippers are rushing all available tonnage to the head of the Lakes before the close of navigation. Lake prices are extremely high in sympathy with other quotations.

Circular prices are now a thing of the past as quotations change from day to day. No shipper or operator will guarantee prices quoted today for tomorrow. Premiums are freely offered for quick shipment.

Pocahontas is selling strong in the local market and prices are up to \$7 retail. West Virginia grades are also strong and the same is true of Ohio-mined varieties. In fact consumers are anxious to get fuel, not stopping to ask the grade or the field producing it.

Prices on short tons, f.o.b. mines are as follows:

	Hock- ing	Pom- eroy	Eastern Ohio
Rescreened lump.....	\$4.50	\$5.00	.....
Inch and a quarter.....	4.50	5.00	\$4.50
Three-quarter inch.....	4.35	4.50	4.50
Nut.....	4.25	4.50	4.25
Egg.....	4.25	4.50	4.25
Mine run.....	4.25	4.25	4.25
Nut, pea and slack.....	4.15	4.10	4.10
Coarse slack.....	4.15	4.00	4.00

CINCINNATI

The market continues strong and high, with coal scarce in all lines. The car situation remains bad, with no improvement in sight.

While comparatively mild weather has prevented any increase in the rush of business, no further stimulus has been needed. In fact, if it were any better, the trade would hardly be affected, as the demand is already in excess of the available supply, and prices are the highest that ever prevailed in anything like normal times. Nut and slack has moved up to around \$3@3.25 for the better grades in both West Virginia and eastern Kentucky, and sales are reported even higher than these prices.

Domestic dealers are virtually without reserve stocks, as they were unable to accumulate much coal earlier in the season, on account of the difficulty in getting labor to unload cars. The car situation is very bad, a 50 per cent. run being about the maximum, while many operators declare that they are getting only about 30 per cent. of requirements. This is naturally affecting the labor supply, as the men do not like to stay at mines where they can work only half time, with wages high and the demand for labor insistent elsewhere. Locally there is no real danger of a coal shortage, with rail and river supplies to draw upon, but interior markets in many cases report serious danger of a shortage of fuel.

LOUISVILLE

Car shortage pinching more sharply with consumers on hand-to-mouth basis. Hope of benefits through Interstate Commerce investigation. River supply small; retail prices advance again.

Increasing agitation on the part of the industrial consumers features the week in the Kentucky coal market. One of the largest plants in the city ran for several hours recently on wood waste, awaiting a coal shipment, while others are electrifying, relying on the central-station supply. No hopes of improvement in the car supply are given and the Louisville & Nashville has announced an embargo on certain northbound coal shipments. Some few barges of West Virginia coal have arrived by river, although one or two went aground and a higher stage of water is needed.

The retail market in Louisville has taken a third advance, western Kentucky lump selling at \$5 a ton, delivered, and best grades of eastern Kentucky lump going to \$6, with the Byrne & Speed Co. about the only agency with any considerable supply. All eyes are turned to the Interstate Commerce Commission inquiry opening here Oct. 3, in the hopes that the outcome will be some regulations which will expedite loading and unloading of cars.

Open market prices are based by western Kentucky operators at \$2.50@3 a ton for lump at the mines, with no steam coals quoted. Eastern Kentucky quotes lump at \$3.50@4 and nut and slack around \$2.50. The whole market is extremely chaotic. Some operating companies are declining any new orders, while all are taking them conditionally.

BIRMINGHAM

Steam prices continue to soar and have reached highest figure in history of the district. Domestic grades 50c. to 75c. over quotations month ago. Car supply 50 per cent. to 60 per cent. of requirements.

Steam-coal prices are still on the ascendancy and free coal is now selling at \$3@3.50, f.o.b. mines, and the supply very scarce at that. Consumers throughout the territory supplied by this district are having to bestir themselves to secure sufficient fuel to keep their plants in operation, and so insistent is the demand that many industries have had representatives here for some days looking after their interests.

It is understood that some large plants have been forced to suspend operations temporarily pending a replenishment of their fuel supply. The railroads are also carrying very limited stocks and are forced to watch after their fuel supply very closely in order to prevent actual shortage. It is stated that 90 per cent. of the production of the commercial mines is being supplied on contracts taken at the prices prevailing when the market was at a low ebb, leaving only 10 per cent. for the spot buyers.

Domestic grades are quoted at from 50c. to 75c. above the prices which prevailed a month ago. The intermittent cool and warm spells have caused an unsteady demand, but ample business is still being booked for delivery in the next thirty days.

Coke

CONNELLSVILLE

Coke demand heavy. Spot market wild, advancing then receding. Foundry coke becoming established at high level. Production and shipments decreased.

The coke market has been still more excited since last report. The furnaces have been calling for heavier shipments on the usual "requirement" contracts, whereas production and shipments have been curtailed somewhat further by car and labor shortage, chiefly the former. The merchant furnaces as a rule have had to slow down as they could not afford to pay furnace prices, but some steel interests have paid whatever necessary to secure coke.

Thursday of last week \$8 was paid for spot furnace coke, but within a couple of days \$7 was asked and it required some search to find a buyer at that figure. This week the market seems to be stagnant. Sellers are talking of holding \$7 as the spot price. Foundry coke has now responded to the advance in furnace, having previously lagged behind, and some operators have been quoting \$8 minimum to dealers, representing about \$8.25 to consumers, but there are occasional sellers at less.

Contracts on furnace coke are in abeyance as sellers' views are very high and furnaces not already covered prefer to wait until the atmosphere clears. Some of the foundry-coke sellers have named contract prices, and we note one fair-sized contract closed at about \$5.25 net to the consumers. We quote the market as follows: Spot furnace, \$7; contract, nominal, \$3.75; spot foundry, \$7@8.25; contract, \$5@5.50, per net ton atovens.

The "Courier" reports production in the Connelleville and lower Connelleville region in the week ended Oct. 21 at 398,096 tons, a decrease of 7,610 tons, and shipments at 397,600 tons, a decrease of 8,056 tons.

Buffalo—There is all of the former activity, with prices strong, but not materially higher than

last week. Shippers find it difficult to fill orders at any prices, with both men and cars so far short of the demand. Quotations per short ton, f.o.b. Buffalo, are \$9.75 for foundry and furnace, \$8.35 for high sulphur and \$7.35 for stock coke.

Baltimore—Coke users here are very short. Several of the foundries have been operating almost from day to day. Prices have steadily advanced. Sales of foundry coke at from \$7.50 to \$8 have been noted here.

Chicago—Coke shipments from all points fail to satisfy the demand which is unprecedented. Prices are steadily rising, having advanced from \$2 to \$2.50 per ton during the last ten days. Coke shippers are making every effort to keep up with the tremendous influx of orders, but make little progress. Prices are as follows per net ton, f.o.b. cars, Chicago:

Connelville	\$9.00 to 9.25
Wise County	9.00 to 9.25
Byproduct foundry	9.00 to 9.25
Byproduct domestic	8.00 to 8.50
Gas house	6.25 to 6.50

St. Louis—No movement of outside domestic coke reported. Contract foundry coke is all that is expected. Plenty of local byproduct and gas for local demand, which is good. Outside shipments, especially for the West and coast points several weeks behind, with no prospect of equipment situation improving and additional orders piling up.

Middle Western

GENERAL REVIEW

Unprecedented conditions prevail. Prices soaring to new high levels with further advances in prospect. Tonnage scarce and car supply totally inadequate.

An extravagant range of prices prevails in all Western markets with panicky conditions evident in some quarters. Car shortages are the principal factor coupled with an enormously increased demand. Steam users seem to be willing to pay any price to get coal. Tonnage is short everywhere. Car supply is averaging 50 per cent. of requirements at Indiana and Illinois mines, and in Kentucky about 30 per cent. Advances averaging from 50c. to \$1 per ton have occurred during the past week.

The territory served by Illinois and Indiana coals has become greatly extended recently, and inquiries are being received for tonnage from Eastern points never before entered by Western coals. Some of the railroads serving Kentucky mines have embargoed further shipments to Chicago proper. There is little difference between the steam and domestic sizes, though if anything, steam sizes have been in the most urgent demand.

Considerable southern Illinois coal has been going into Michigan lately at premium prices, and October saw the largest tonnage ever shipped to the Northwest from Illinois mines. It is said that during the first half of the month Franklin County produced over a million tons, the mines working about 80% of full time.

The extraordinary situation now existing is due to several causes: Failure of steam users to store coal when it was to be had last summer, shortage of Ohio River coal in the South, and the small tonnage moving up the Lakes due to shortage of bottoms. Tremendous efforts are now being made in all quarters to obtain tonnage at any price, and inasmuch as there is not enough coal to go around, no relief is in sight. With the car situation in bad shape and heavy movement of traffic other than coal, the outlook is extremely uncertain, with a tendency toward further stringency of supplies and higher prices.

CHICAGO

Steam coals reach new high levels. Retailers find it difficult to secure enough tonnage. Smokeless shipments extremely scarce. Anthracite very short.

Circular prices on the three major sizes of Franklin and Williamson County mines are obsolete. Shippers have been selling domestic sizes at prices current at the time of shipment. Domestic lump, egg and No. 1 nut have sold as high as \$2.25 in the open market, with little free tonnage available. Screenings have reached the unprecedented level of \$2.25. Williamson County lump, egg and washed coal have sold as high as \$3 and some southern Illinois coal is moving for Eastern deliveries at maximum prices.

The Union Pacific Ry. has bought 50,000 tons of mine-run coal from the Franklin County mines at \$1.60. All free shipments of southern Illinois mine-run have been sold during the past week at prices ranging from \$2 to \$2.50 per ton. Classification of production seems to be of little importance, and any size of coal to be had is snapped up as fast as it is available. Harrisburg mines are out of the open market for both steam and domestic sizes.

The Springfield district has been given lower rates into Omaha and other Western points, which has widened its markets considerably. The Wabash R.R. has also made a favorable rate to Michigan points on Sangamon County coal, which will be of great benefit to the operators of that district.

An unprecedented demand for Indiana production in the Chicago district is noticeable with little

free coal available. Clinton and Knox County lump has been sold as high as \$3.25, with Nos. 5 and 6 screenings reaching the \$2 price. Mine-run is averaging much better than \$2. Michigan and Ohio have been free buyers of Indiana coal, paying as high as \$3.25 for lump and \$2.50 for mine-run. So far the Indiana operators have had little free tonnage to spare for these foreign demands.

Spot shipments from the West Virginia fields have been very scarce. The demand is greatly accentuated, lump and egg selling around \$5, with mine-run at from \$3.75 to \$4. No Pennsylvania smokeless is being received. No Hocking tonnage is arriving, and what little splint lump is on the market has been sold around \$3.75. Eastern Kentucky coal is no factor in this market at the present time, and the very little tonnage received here is quoted at from \$4 to \$5 for lump and egg. Railroad embargoes on Kentucky coal are seriously interfering with receipt of normal tonnage in this territory.

The anthracite situation is a complex one. The old line companies are endeavoring to maintain schedule prices, while representatives of the independents are unable to secure tonnage of any consequence. Jobbers are selling independent coal at prices from \$1 to \$1.50 better than list figures. Anthracite storage piles in retail yards are being steadily depleted, with no relief in sight, and many dealers are exacting premiums from the consuming public which is the cause of much newspaper comment.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars mines:

	Wilms. and Frank. Cos.	Springfield	Sullivan Co.	Clinton	Green and Knox Cos.
Lump	\$3.00@3.25	\$2.75@3.00	\$2.75@3.25	\$3.00@3.25	\$3.00@3.25
Steam lump	2.50@2.75	2.50@2.75	2.25@2.50	2.25@2.50	2.50@2.75
2 1/2-in. lump			2.50@3.00		
1 1/2-in. lump			2.00@2.50		
Egg	3.00@3.25	2.50@3.00	2.50@2.75	2.75@3.25	3.00@3.25
Nut	3.00@3.25	2.00@2.25	2.00@2.50	2.00@2.50	2.00@2.25
No. 1 washed	3.00@3.25				
No. 2 washed	3.00@3.25				
No. 2 nut	2.00@2.50				
No. 3 nut	2.00@2.50				
Mine-run	2.00@2.75	2.00@2.25	2.00@2.25	2.50@3.00	2.00@2.35
Screenings	2.00@2.50	1.85@2.15	1.85@2.00	2.00@2.25	2.00@2.25
	Saline and Harrisburg	E. Kentucky	Pocah. and W. Va. Smokl.	Penn. Smokeless	
Lump	\$3.00@3.50	\$4.50@5.00	\$4.50@5.00	\$4.50@5.00	
1 1/2-in. lump	2.00@3.00				
Egg	3.00@3.50	4.00@5.00	4.50@5.00	4.50@5.00	
Nut	3.00@3.50				
No. 1 nut	3.00@3.25				
No. 2 nut	2.00@2.50				
Mine-run	2.00@2.50	2.50@3.50	4.00@4.25	4.50@4.75	
Screenings	2.00@2.50				

Hocking lump, \$3.75@4. Splint lump, \$3.50@3.75.

KANSAS CITY

Operators are many weeks behind in their orders. Kansas lump coal has advanced from \$2.50 to \$2.75 at the mines, which with freight of 90c., gives the dealer coal at \$3.65, which retails at \$5.25. Missouri coal costs \$3.40 at Kansas City, and sells for \$5. Last year at this time, Missouri coal at the mines sold for \$1.85 to \$2, against the present price of \$3.

Steam coal has nominally advanced 10c. to \$1.60, freight 75c. from Kansas field, but this was done largely to retard outside orders, operators and dealers having more than they can do to supply their own contracts and customers.

The shortage of equipment on the railroads is causing an acute situation in the coal supply, both domestic and steam, in Kansas City. The domestic situation is aggravated by the fact that householders were slow to order coal this fall, the summer deliveries being smaller than usual. Now that the winter is close, many are unable to get coal. One of the largest companies, for instance, recently had only four cars of lump coal on hand.

ST. LOUIS

Unprecedented demand for all sizes develops record-breaking prices. Car-supply problem serious. Steam sizes getting stronger. Eastern coal unobtainable. Actual fuel famine in country towns.

With weather prevailing that creates no unusual demand for coal the local market continues strong and a steadier tone is noted this week in the face of a continuous advance on all sizes. It appears to be a settled opinion with shipper and buyer that conditions warrant an exceptional market. Very little coal is offered from any field. Orders placed by Northern and Western railroads as well as local systems in addition to their maximum contract tonnages seems to be one of the causes for no free coal.

Steam sizes have proved the surprise of the week here. Carterville mine-run is quoted as high as \$2 and screenings jumped to \$1.50.

There were times during the week that Standard coal was entirely off of the market. Car shortage conditions seem to be slowly but steadily getting worse. The railroads instead of unloading thousands of cars of railroad fuel are keeping it at convenient distributing points in the cars. Embargoes are also beginning to appear on account of abuse of equipment by shippers. Local demand for high-grade coal is easier. Mt. Olive and Standard are getting stronger.

Consumers of anthracite, smokeless and Arkansas are being forced to use Illinois coals, the tonnage of these coals available here being less than one-half of the normal local demand.

Retail prices are from 75c. @ \$1 per ton higher than the same period of previous years. Cold weather may cause a further increase.

The prevailing market, f.o.b. mine, per short ton, is as follows:

	Williamson & Franklin Co.	Mt. Olive	Standard
6-in. lump	\$2.75@3.00	\$2.25@2.50	\$2.00@2.25
6x3-in. egg	2.75@3.00	2.25@2.50	2.00@2.25
3x2-in. nut	2.75@3.00	2.00	2.00
No. 2 nut	2.00@2.25	1.85	1.75
No. 3 nut	1.75@1.85	1.50	1.60
No. 4 nut	1.50@1.65	1.40	1.50
No. 5 nut	1.30@1.50	1.30	1.30
2-in. lump		2.00	1.85@2.00
Mine-run	1.75@2.00	1.85	1.65@1.85
Steam egg		1.95	1.65@1.75
Washed			
No. 1	2.75@3.00	2.25@2.50	2.25@2.50
No. 2	2.00@2.25	1.75@1.85	2.00@2.25
No. 3	1.75@1.85	1.50@1.60	1.75@2.00
No. 4	1.50@1.65	1.40@1.50	1.50@1.75
No. 5	1.30@1.50	1.30	1.25
Screenings	1.40@1.50	1.35@1.50	1.25@1.35

St. Louis rate from Williamson and Franklin County is 72 1/2 c.; from other groups, 57 1/2 c.

General Statistics

BALTIMORE & OHIO R.R.

The following coal and coke tonnage was moved over the Baltimore & Ohio R.R. and affiliated lines during the months of August and September, 1916 and 1915:

	August 1916	August 1915	September 1916	September 1915
Coal	2,998,897	3,009,028	2,895,719	3,034,271
Coke	350,101	345,258	352,629	331,224
Total	3,348,998	3,354,286	3,248,348	3,365,495

PENNSYLVANIA RAILROAD

The following is a statement of shipments over the Pennsylvania Railroad Co.'s lines east of Pittsburgh and Erie for September and the nine months of 1915 and 1916, in short tons:

	September 1916	September 1915	Nine Months 1916	Nine Months 1915
Anthra.	1,062,119	783,307	8,829,867	7,594,600
Bitumin.	3,946,824	3,901,402	36,523,300	31,604,477
Coke	1,165,994	1,152,668	10,848,230	8,376,508

Total... 6,174,937 5,837,377 56,201,397 47,575,585

NORFOLK & WESTERN

The following is a statement of coal handled by the N. & W. Ry. during September and the preceding two months in short tons:

	July	August	Sept.
Pocahontas	1,449,384	1,631,263	1,577,193
Tug River	321,687	345,167	316,868
Thacker	278,701	286,008	295,628
Kenova	77,320	94,772	84,392
Clinch Valley	121,372	121,148	118,974
Miscellaneous	3,692	5,353	2,709

Total N. & W. 2,252,156 2,483,711 2,395,764

Wm. & Pond Ck.	118,014	111,390	122,939
Tug R. & Ky. R.R.	55,299	55,359	55,605
Other roads	415,976	398,480	408,611

Grand total..... 2,841,445 3,048,940 2,982,919

Distribution of shipments for July of this year were as follows:

	Shipped	Tipple	Total
Pocahontas.....	1,370,892	10,173	1,381,065
Tug River.....	321,687	2,220	323,907
Thacker.....	278,701	6,899	285,600
Kenova.....	77,320	6,994	84,314

Totals..... 2,048,600 26,286 2,074,886

Shipments of coke, entirely from the Pocahontas field, amounted to 116,965 tons as compared with 134,483 tons in June.

IMPORTS AND EXPORTS

The following is a comparative statement of coal imports and exports of the United States for August, 1915-16, and for the 8 months ended August 1914-15-16, in long tons:

Imports	August		Eight Months	
	1915	1916	1915	1916
Anthracite, total.....	77	14	15,902	2,390
Bituminous, total.....	116,295	123,624	861,513	951,517
United Kingdom.....	200		8,308	15,610
Canada.....	84,770	111,130	669,512	758,634
Japan.....	10,540	9,300	44,449	56,919
Australia.....	20,785	5,194	137,191	117,778
Other countries.....			2,053	2,576
Coke.....	9,231	1,661	67,003	33,620
Exports				
Anthracite total.....	307,137	394,244	2,302,399	2,847,005
Canada.....	293,318	384,267	2,261,722	2,750,453
Argentina.....	1,740		2,627,945	2,335
Brazil.....	2,372		2,415	428
Uruguay.....	600		605	
Other countries.....	9,107	9,977	29,024	35,322
Bituminous total.....	2,000,848	2,384,583	10,591,155	12,762,670
Italy.....	382,154	218,525	2,023,945	1,435,209
Canada.....	947,069	1,525,622	4,737,655	7,738,462
Panama.....	49,423	45,815	190,965	329,450
Mexico.....	18,507	16,080	215,068	218,816
Cuba.....	114,299	135,438	696,111	734,536
West Indies.....	42,347	30,082	415,824	308,605
Argentina.....	128,823	106,729	138,219	662,714
Brazil.....	53,002	100,993	155,225	482,971
Uruguay.....	30,956	13,829	56,514	130,790
Other countries.....	234,268	191,470	1,138,408	961,673
Total coal.....	2,307,985	2,778,827	12,893,554	15,609,675
Coke.....	83,085	80,955	513,709	675,947
Bunker coal.....	672,990	780,561	5,038,576	5,027,009

I. C. C. Decisions

No. 8273—City of Springfield, Tenn., vs. Louisville & Nashville R.R. Submitted Feb. 2, 1916. Decided Oct. 3, 1916.

The present rate on coal from certain mines in western Kentucky on the Louisville & Nashville to Springfield, Tenn., not shown to be unreasonable or unjustly discriminatory. Complaint dismissed.

No. 7,649. Coal Operators' Traffic Bureau of St. Louis, Mo. vs. Baltimore & Ohio Southwestern R.R. Submitted Feb. 24, 1916. Decided Oct. 3, 1916.

Rate charged for the transportation of bituminous coal from group 2 points in Illinois to St. Louis, Mo., found not to have been unlawful.

Foreign Markets

GREAT BRITAIN

Oct. 12—A slight amelioration in conditions as regards availability of coal is now discernible, and it is hoped that these better conditions will be maintained. Prices rule a trifle weaker.

Quotations are approximately as follows:

Best Welsh steam.....	Nominal
Best second.....	Nominal
Seconds.....	\$11 28@11.42
Best dry coals.....	10 20@10.32
Best Monmouthshires.....	11 28@11.42
Seconds.....	10 20@10.32
Best Cardiff smalls.....	7 20@ 7.44
Cargo smalls.....	5.40@ 5.52

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—The freight market is still very bare of orders and there is an extraordinarily small volume of chartering outside military requirements. The market shows inequalities here and there, eastern Mediterranean comparing unfavorably with West Italy, and Plate with Western Islands, etc.

The freight market is quotable about as follows:

Gibraltar.....	\$6 96	Port Said.....	\$14 40
Genoa.....	15 60	Las Palmas.....	6 36
Naples.....	15 60	St. Vincent.....	7 20
Alexandria.....	15 00	River Plate.....	6 96

Financial Department

The Philadelphia & Reading Coal & Iron Co.

This company reports for the year ended June 30, 1916, as follows:

The total production of anthracite coal from the lands owned, leased and controlled by the Philadelphia & Reading Coal and Iron Co. for

Expenses	1915-16	1914-15
Mining coal and repairs	\$20,839,430.48	\$19,211,157.63
Improvements at collieries, etc.....	709,344.71	682,068.43
Coal purchased (anthracite).....	18,098.84	216,250.35
Coal purchased (bituminous).....	1,062,962.18	961,386.32
Royalty of leased collieries.....	557,188.33	499,398.90
Transportation of coal by rail.....	5,799,566.11	5,569,892.61
Transportation of coal by water.....	1,067,853.41	1,076,081.53
Handling coal at depots	483,229.85	430,749.51
Taxes on coal lands and improvements.....	685,465.19	458,681.75
Improvements and repairs of houses.....	35,378.51	34,394.10
Damages account coal dirt.....	3,342.03	1,342.13
Workmen's Compensation Fund appropriation.....	233,833.34	
All other expenses.....	1,544,990.32	1,261,522.72
Coal sold from stock.....	1,704,244.75	
Total.....	\$30,333,025.98	
Less coal added to stock.....	613,750.57	
Total expenses.....	\$34,744,928.05	\$29,719,275.41
Profit in operating.....	\$1,858,831.37	\$367,236.68
Fixed charges, taxes and interest.....	160,646.27	136,370.16
Taxes on coal lands and improvements for previous years.....	55,639.85	146,515.71
United States Special Excise Tax, 1912.....		23,778.83
Judgment paid Bellas Estate.....	362,497.14	
Total.....	\$578,783.26	\$306,664.70
Profit.....	\$1,280,048.11	\$60,571.98
Profit of previous years.....	3,375,248.45	3,314,676.47
Balance to Credit of Profit and Loss Account.....	\$4,655,296.56	\$3,375,248.45
TONNAGE		
Mined (anthracite).....	\$9,399,722.18	\$8,161,836.19
Purchased (anthracite).....	8,153.11	115,478.07
Sold (anthracite).....	10,152,082.09	8,083,487.00
On hand (anthracite).....	1,057,020.03	1,785,768.13

BALANCE SHEET

Debit	
Capital Accounts	
Coal lands.....	\$47,400,702.77
Timber lands.....	843,828.39
New York and Eastern depots.....	840,774.70
Western yards and depots.....	1,842,293.40
Miners' and other houses.....	553,137.67
Pottsville shops, real estate and improvements.....	417,939.87
Storage yards and washeries.....	675,107.78
Other real estate.....	405,468.20
Improvements and equipments at collieries.....	12,959,224.33
Stocks and bonds of and loans to companies controlled.....	9,863,914.75
	\$75,802,331.86
Current assets	
Cash.....	\$2,546,721.75
Bills receivable.....	7,092.59
Coal accounts.....	4,053,684.25
Rent accounts.....	49,271.96
Companies and individuals.....	802,854.43
Coal on hand.....	4,183,126.49
Supplies and materials on hand.....	1,408,017.66
Total.....	\$13,059,769.13
Stocks, bonds and mortgages.....	\$88,862,101.24

Credit

Capital Accounts	
P. & R. Collateral Sinking Fund loan, 1892-1932.....	\$965,000.00
Capital stock.....	8,065,000.00
Reading Company.....	71,663,134.92
Current Liabilities	
Pay-rolls and vouchers.....	\$1,223,673.15
Due for coal purchased.....	966.03
Due for royalty on coal mined.....	104,115.25
Freight and tolls due foreign roads.....	28,993.62
Companies and individuals.....	719,890.22
Interest due and uncollected.....	60.00
Interest and taxes accrued.....	630,209.10
Total.....	\$2,704,909.37
Miners' and laborers' beneficial fund.....	22,638.36
P. & R. Railway Company Current account.....	929,495.03
Profit and loss to June 30, 1915.....	3,375,248.45
Profit and loss July 1, 1915, to June 30, 1916.....	1,280,048.11
	\$4,655,296.56
	\$88,905,474.24

Note—For previous annual report of this company see Vol. 7, p. 486.

INCOME ACCOUNT FOR THE YEARS ENDED JUNE 30

Receipts	1915-16	1914-15
Coal sales (anthracite).....	\$34,869,157.34	\$28,476,166.68
Coal sales (bituminous).....	1,156,497.51	1,028,019.82
Coal rents.....	322,127.05	325,432.13
House and land rents.....	142,406.29	141,610.83
Interest and dividends.....	70,574.31	85,394.87
Miscellaneous.....	42,996.92	29,887.76
Total receipts.....	\$36,603,759.42	\$30,086,512.09